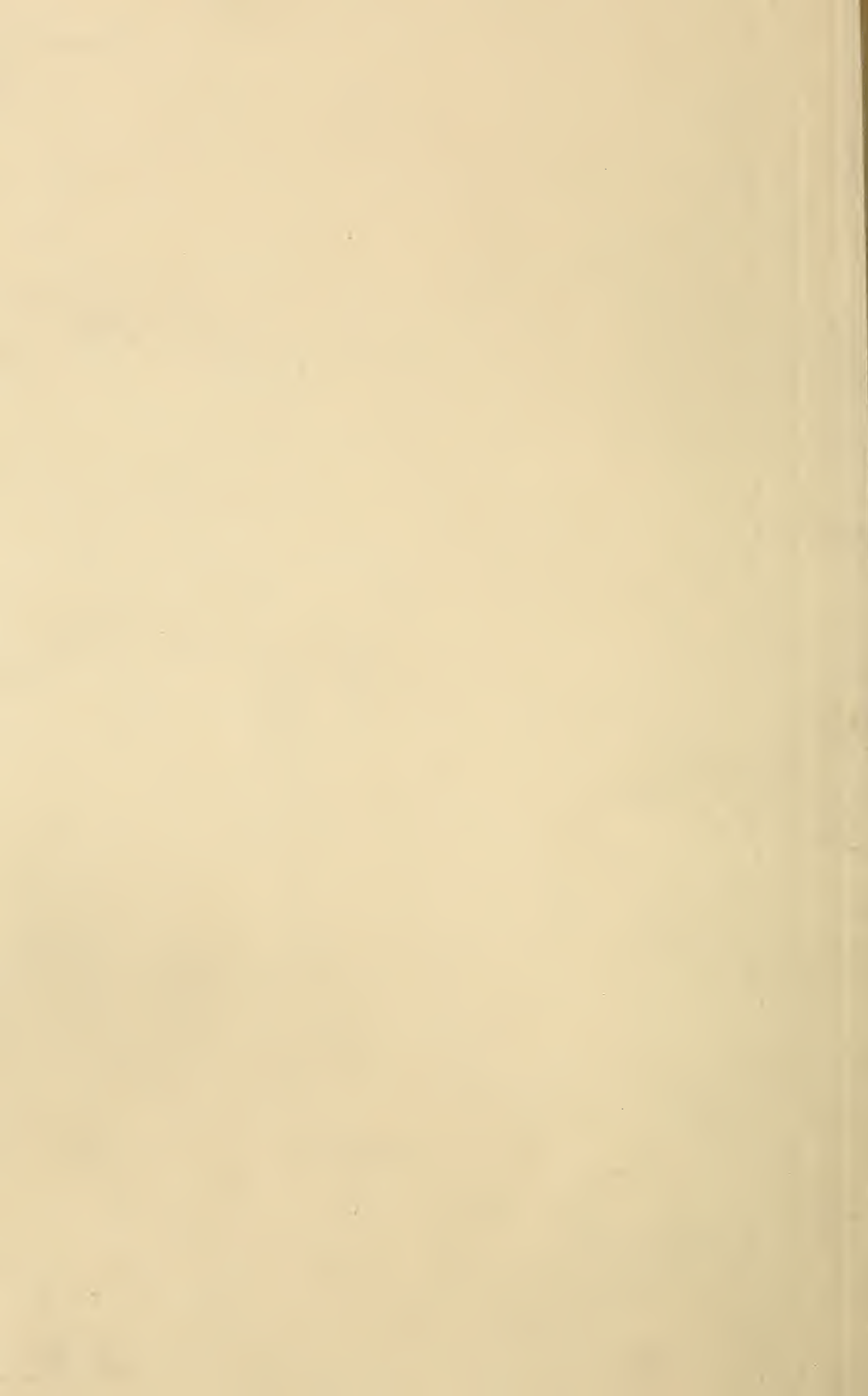


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# GLEANINGS

A JOURNAL  
DEVOTED  
TO BEES  
AND HONEY  
AND HOME  
INTERESTS

## BEE CULTURE

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ED. JOLLEY calls white clover a biennial, in *American Bee-keeper*. It's a perennial "in this locality."

EDITOR YORK saw barrels of honey emptied that weighed 28 pounds before filled and 40 pounds after emptied. No wonder he advises tin. [See editorial elsewhere.—ED.]

A BEGINNER, reading p. 843, might understand that he can have all-worker comb built with shallow starters of foundation. In this locality, especially in the frames after the first five, he'd get a good deal more drone comb than would be to his profit.

"THERE IS NO USE in trying to improve soured honey," says Fr. Greiner, page 829. True, if it's all soured; but in many cases part is soured and part granulated. Turn a crock of such honey on its side, and in a few days the liquid sour part will be drained off for vinegar, and the solid part can be melted up into fair honey.

SORRY that letter of Doolittle's (p. 849) got into a place where the printer's rules made it in small print. It ought to be coarser print, and leaded. That's a wonderful record. If I figure straight, he got more than 600 sealed cells from that one colony, the queen laying all the while. If I didn't know Doolittle so well, I'd think he was romancing.

IT IS SUFFICIENT to observe a colony in full activity in harvest, either in day time when the thousands of workers are going and coming, or in the evening when the fanners are at work, to convince one that a large entrance is indispensable.—M. Bertrand, editor *Revue Internationale*. [This ought to have been printed in capitals. It is true, every word of it.—ED.]

REV. T. J. L. MAYER says, in *British Bee Journal*, "I think your chance with *Apis dorsata* is nil. I had seven hives, hived and fed all winter, and in the spring the little brutes decamped by 20 and 30 a day until each queen, in turn, got disgusted and left the hive." [Here, indeed, is a valuable fact. May be I

am wrong, but it seems to me *Apis dorsata* should be tried in their own climate, and that pretty thoroughly, before we can go to great expense in bringing them to this country.—ED.]

DR. E. GALLUP says, in *American Bee Journal*, that he gave a queen 24 Gallup frames, "and she occupied the whole 24 fully, with brood and eggs, in short order." Bro. Doolittle, how do you reconcile that with your statement (GLEANINGS, 801), that 9 Gallup frames "entertain the best queen to her fullest capacity as to egg-laying"? Didn't Gallup's queen need nearly three times as much?

"AS THE EYE of the physician judges of internal conditions by external symptoms, so the practiced eye of the bee-keeper can easily determine the condition of a colony without removing a comb."—W. Z. Hutchinson in *Country Gentleman*. If a physician had any way by which he could remove a diseased internal organ and get it safely back in place, rest assured he wouldn't depend entirely on external symptoms.

PROPOLIS, says E. Agassiz, in *Revue Int.*, can be used in the manufacture of fireworks in place of gum-lac. The pulverization of gum-lac is a difficult thing, while propolis is easily powdered when cold. [Propolis for fireworks! and notwithstanding the stuff is ever present it is never where we want it! I wonder just how much it would cost the average bee-keeper to gather up 100 lbs. of it, even in cold weather. I doubt if there is any who would take the job at \$5.00 per lb.—ED.]

"APARTMENT" and "department" are words that continue to get mixed up in the bee-journals. Doesn't "apartment" refer to space and "department" to kind? The linen and the woolen departments of a store may be in the same apartment, and one of these departments may occupy two apartments. When a queen goes up into a super, she goes into another apartment. [Yes, I have noticed the confusion in the use of the words "apartment" and "department" in one of our contemporaries.—ED.]

E. E. HASTY here, and Valentin Wuest in Germany, have tried raising kinds of clover from which honey-bees could get big yields,



but both seem to have given it up discouraged. Wuest says (*Deutsche Illustrierte Bienenzeitung*), it's a mistake to suppose that dry weather stunting the growth of red-clover blossoms makes hive bees get honey from them; but it's the moist hot weather that makes such an abundant flow of nectar that the tubes are filled up within the reach of their short tongues.

"I FIND COWS, wherever I go, eating it greedily whenever they have access to it," says A. I. Root of sweet clover, p. 838. Friend Root, you mustn't talk that way. Lots of places where they won't even eat it sparingly, and I'm pretty sure you've been at some of the places, only you didn't look. Come to Maren-go, and you can see sweet clover untouched where cows have been tied on it. But I believe all can be taught to eat it. My horses are eating the hay, and I wish I had a mow filled full of sweet-clover hay.

"EQUALLY PLAIN is the inference that this is the class of words to which I object, because 'a good many like it,'" is a sentence on p. 831 so badly jumbled that it isn't worth straightening. What I meant to say was that "sass" and some other words used playfully were the class of words to which Mr. Taylor objected. [The passage in question should have read: Equally plain is the inference that this is the class of words to which Mr. Taylor objects when he says, "Dr. Miller justifies the use of the class of words to which I object, because 'a good many like it.'" It was our mistake, doctor, and not yours.—Ed.]

W. C. GATHRIGHT, p. 807, thinks it more important to have separators come  $\frac{1}{4}$  in. below top of sections than to have passages in center of separators. Has never seen sections bulged at top, and bees finish up honey and seal top row of cells better than with separators that come to top of sections. I'm anxious to believe he's right, and I think he is. [Notwithstanding I have been on the other side of the fence, and that very recently, enough testimony has come in to convert me to the belief that it is important to have the separators drop  $\frac{1}{4}$  inch below the top of the sections. Our fences for 1899 will be narrow enough to allow this space above and below.—Ed.]

G. M. DOOLITTLE thinks  $6\frac{3}{4}$  Langstroth frames, rightly manipulated, enough to entertain the best queen to her fullest capacity. I believe that would be less than 2500 eggs a day. I think Doolittle says he has had queens lay 5000 eggs a day. Would the fullest capacity of such a queen be less than 2500 a day for three weeks or more? [See answer to Straw in this issue regarding Dadant's statement to the effect that queens will lose time in hunting for empty cells. If G. M. Doolittle follows the Doolittle method as we follow it, many of his queens will want more room than  $6\frac{3}{4}$  L. frames would allow, or else his locality is essentially different from ours. Will Doolittle explain?—Ed.]

INSTEAD of using an introducing-cage with candy for the bees to liberate the queen, a writer in *Centralblatt* winds wrapping-twine over the mouth of the cage, and the bees

gnaw it open. Others make a cage of comb foundation with holes pierced through. The question is, whether candy makes bees kinder to the queen when liberating her. I doubt it. [I do not think it makes any difference whether string, candy, or foundation is used, so long as it takes the bees from 15 to 20 hours to release the queen, and that without any disturbance from the apiarist. I have for years believed it was bad policy for the bee-keeper to help along the process of introducing by releasing the queen. In my experience there have been fewer queens by considerable killed when the bees did it themselves.—Ed.]

C. P. DADANT thinks if a queen has just enough room for her needs she'll lose time hunting empty cells (p. 791). Looks reasonable. And yet, no matter how much room she has, doesn't she always keep her brood compact? and if so, what good will extra cells be? [Empty cells? If the brood-circle in each frame were filled with brood, I feel very sure that, in our locality, some of our queens would commence filling brood-circles in frames above rather than deposit more eggs in the frames below. Very many of our queens reared by the Doolittle method require more room than an eight-frame brood-nest will allow them; but our queens reared by the old plan would usually have about all the room they required in the single brood-nest. Of course, there are exceptions to both cases. Empty cells? Why, an Italian queen will seldom lay outside of the circle, even though there be empty cells all around it; but Holy Land or Cyprian queens will fill the whole frame out, corners and all. There, perhaps I have not covered your question. If so, Mr. Dadant will do so.—Ed.]

MY GOOD FRIEND J. M. Hambaugh says, p. 839, that the most satisfactory feeder in his experience is the Hill. Which makes me wonder whether a Miller or a crock-and-plate feeder has ever strayed within the range of his experience. [Just so. But the greatest objection to these feeders is that they are too small. Either the Miller or the crock-and-plate feeder is large enough to give all a colony requires for winter at one feed. Something cheaper still, and almost as good, is a common tin pan and a sheet of cheese-cloth. Fill the pan with syrup, and lay upon the syrup a strip of cheese-cloth that has first been dampened in water—the cloth serving as a float for the bees. I have known bees repeatedly to empty a pan thus prepared, in a single evening. One difficulty with this style of feeder is that when the pan is emptied the cloth is pretty apt to be stuck down with sugar crystals—not a serious objection, however, because both can be scalded clean. Speaking of the Miller feeder, perhaps I ought to explain why I prefer this to any other. It is because the bees will take the feed out of it when they would not go near a tin pan. Then it is so constructed that the warmth from the cluster can ascend centrally through the feeder to the top of the opening directly over the center of the cluster, permitting the bees to take out the syrup when they wouldn't go near a bread-pan or metal feeder.—Ed.]



### LARGE HIVES.

#### Single-story Large, versus Two-story Eight-frame.

BY C. P. DADANT.

*Mr. Editor:*—I have now come to the hardest portion of my argument.

When Greek meets Greek, then comes the tug of war.

But when you and Dr. Miller join Hutchinson and Taylor and Doolittle *against me*, where shall I be? The worst of it is, you have a chance to talk just as soon as I have done, and so destroy the effect of my arguments. Then the other fellows thrust at me between times. I wonder how much there will be left of what I have to say, by the time you all get through tearing it up. Dr. Miller doesn't say much; but, although he claims never to know, he always seems to me to give the hardest arguments in the fewest words.

No, I can't agree with you in double stories of small hives. Dr. Miller's way of putting the second story under the first is certainly the best; but even that does not satisfy me as well as my own way of having it all in one story, expandable at will. You must remember that I speak of a hive as long as the Langstroth, or longer, and about  $2\frac{1}{2}$  inches deeper, with a movable partition-board, or dummy, and containing 10 frames. This hive, as I have already explained, is of a capacity that will about accommodate the most prolific queens.

Your eight-frame hive is too small; and when it is doubled, it is too large for the laying of the most prolific queens. If you put the additional story on top, you increase the room too much all at once. This has to be done at a time when the bees need all the heat they can generate, and a large space above them is not prone to help them, as you will readily recognize. Dr. Miller makes the addition at the bottom, and so does away with that objection. The queen will then spread her brood downward. But if you are aiming to raise comb honey, as the queen goes downward, as a matter of course the bees will fill the space above them with honey as the brood hatches, and the result will be from twenty to an indefinite number of pounds placed in these combs before the sections are touched. So Dr. Miller lays himself more liable than myself to the objection of our critics, that our large hives are not fitted for the raising of comb honey. As a matter of course, the same objection works equally well if we put the second hive on top. The fact is plain, that you have more room in your two hives than can possibly be needed by one queen, and that the remaining space must be filled with honey before the sections are filled. If your hive is exceedingly strong, you will probably harvest enough more honey to still render

your course more rational than that followed by those who insist on cramping the queen, however prolific, in a narrow compass; but there will be cases when your judgment will have erred, and the queen will not prove equal to the task, and in these cases your crop of comb honey will be null unless there is absolutely no brood in one of the two stories, and you perceive it in time to remove it. My way is plainly the best, for I increase or decrease the room only as fast as needed, one comb at a time if necessary; and when the hive is at its full capacity, if the queen can fill it I have it all in one compact mass, and have a greater surface on top of the brood-chamber for supers. That is, more bees can ascend to the super at one time; and that super with a greater capacity is nearer to the brood than one of the same size with your two-story hive. We all know how important it is in the spring to have the supers close to the brood. My hive is not so top-heavy, thus less liable to tip accidentally. If the queen does not prove equal to the emergency, and does not fill all the combs, there is no difficulty in contracting the brood-chamber by removing the combs that have no brood, to the size wanted by our friends, the lovers of contraction and other methods. With your small hives you have no division-board or dummy; or if you have one it is in the honey-house, piled under a lot of other traps, because you use it only in extraordinary circumstances. Mine is always here in the hive, for I have one space especially reserved for that purpose; and without this dummy, as I said before, our hive would have a capacity for 11 frames and not 10. So the reducing of the capacity of the brood-chamber is only a moment's work.

Now, don't understand me as advising contraction, for I don't. I want only to increase the capacity of the brood-chamber (if it is not fully occupied already by a populous colony) as fast as needed, and then leave it till the summer is over. If I raised comb honey I would not object to a few pounds of honey more than needed in the brood-combs; for I should expect to use an extractor whenever I saw the need of it. When raising extracted honey, however, there is no fear of too much honey below, if plenty of empty comb has been given above when the harvest was on, and the bees have not had to wait. I have seen the time when it was necessary to crowd the bees a little to get them to put enough honey for winter in the brood-chamber.

I believe I have said somewhere already that we have tried double brood-chambers for extracting, and we did not like them. The addition of a full story, all at one time, unless it is on a hive that has already been given all the room the queen could fill, and is, therefore, very populous, seems to me more than needed. The queen also seems to be more readily attracted to a large body of this kind, and to desert the lower hive. Sometimes she will breed in both apartments; and when one tries to find frames full of honey they have to be taken from the sides, or combs of brood have to be extracted, which makes a possibility of throwing some of the grubs out into the



honey. I know that some of our bee-keepers are so careful that this never happens to them, but I confess I can't extract every comb myself, even if I were as faultless as they, and I have to rely on a more or less careful boy to turn the crank.

In short, I have just as much objection to using full stories, Langstroth size, for supers, as I have to using the little, shallow, four-and-a-fourth-inch toy extracting-frames, which run matters to the other extreme, and make too much handling for the amount of honey harvested. The section-case is little enough for comb honey, but its size is entirely inadequate when extracting is the aim; and if you had only tried the six-inch extracting-frame I know you would agree with me.

I propose, in my next, to consider the objectionable features of large hives. It has been lately said, by some apiarists, that I was leading the folks on the wrong track, so I must atone by showing you wherein our faults lie. I hope I am not repeating myself too much. I notice, in reading over my past articles, that I might have condensed my thoughts a little more, and will try to do this in the future.

Hamilton, Ill.

[I must admit that Mr. Dadant has given some pretty solid arguments in favor of his large single brood-chamber as against two brood-chambers of eight-frame capacity. If I am correct, his ten-frame Quinby hive holds an equivalent of comb surface of 12 L. frames. Accordingly, then, Mr. D.'s position is that two eights make four frames too many.]

In referring to his division-board, and the facility he finds in reducing his brood-nest, he is apparently laboring under the impression that we can not similarly contract our two eight-framers. All the hives we have sold for years, of eight-frame capacity, have had a division-board as part and parcel of the hive; and it is our recommendation and practice to keep those division-boards in use, for the hive is made just enough wider to leave space for follower. In putting on an upper story, or, perhaps, better still, an under story, we often give only four frames extra; and then, as the bees require more room, give them the other four, or one, two, or three, as circumstances may require; but more often I give the whole eight frames at once because it saves labor, even though it may not theoretically be the best practice.

Now, friend Dadant, when you add *one frame at a time* to your big colonies, do you not thereby make a great amount of labor? Mr. Doolittle used to argue, and perhaps does now, that it is a good practice to put on only one or two rows of sections at a time, and only as fast as the colony can take them. While there is something in this, the majority of bee-keepers put on a whole super of six rows at one operation, because it saves labor. And there is our friend H. R. Boardman, who produces as much comb honey as any one in proportion to the number of colonies. He puts on three tiers of some 40 or 50 sections at once. I told him that this gave the bees too much space to

warm up at the start. He admitted that there was something in this, but added that his plan saved labor, and as long as he could produce as much comb honey as his neighbors working on the other plan he preferred his own way.

There is one point concerning which friend Dadant does not explain himself fully. By reading between the lines in one paragraph I gather that his large hives are not adapted to comb honey. Elsewhere I get the impression that he can, with them, produce as much comb honey as any one. In one of his future articles I hope Mr. D. will give us a clear and explicit statement covering these points.—ED.]

## SANTIAGO DE CUBA AS A BEE COUNTRY.

### Colonies in the Cliffs; A Few Interesting Facts.

BY L. F. HIORNS.

I have just returned from Santiago de Cuba, where I have been since the first of July. I did not find any honey for sale there, but was told that from time to time small quantities of strained honey were brought in. I saw bees working, but failed to find any colonies in hives except at Siboney, where I found four hives. These were about 8 inches square (inside measurement), 2 feet long, open at each end, with a piece of burlap, having an inch hole for an entrance, hanging over the ends. They were on a platform about 4 ft. from the ground.

Unfortunately they had been visited by the soldiers, the honey and comb all removed, and the bees destroyed except in one hive, where there was about a pint of bees and a piece of new comb about 4 inches square. I did not disturb them, and on visiting them three days later I found that some one had cleaned the hive out.

I was told by the Cubans that, before the war, many of the natives had a few colonies in boxes, barrels, or any thing that came handy, but could get no track of any one who had kept more than ten colonies. In many instances I think I was deceived as to the number, it being a habit of the Cubans to tell what they think will please you.

In the caves and crevices of the cliffs along the seashore are the combs of many colonies of wild bees. These are visited from time to time by the natives, and the combs taken away. I tried to get some of the natives to go with me after some of this honey, but could not, being told that the men who did this were still with the Cuban army. As it was impossible to get to the combs without help I could not examine any of these colonies.

From what I saw and was able to learn I would not advise any one to go to that section of the island to locate an apiary.

Scranton, Pa., Nov. 7.

[Just as this goes to press, our correspondent who is to make a trip through Cuba, and report the same in GLEANINGS, writes:]

I am now in Key West; will land in Havana tomorrow, with wheel and camera; then will give you some news as to what has become of modern apiculture in Cuba, especially around Havana, to begin with.  
Key West, Nov. 15. W. W. SOMERFORD.

## RAMBLE 156.

## Surroundings at Oro Fino.

BY RAMBLER.

I regretted to leave my old-time friends so soon; but duty to my agreement with Mr. Levering called me further north, and again I was in the little hotel at the Dos Palos station. This time, instead of awakening the dispenser of drinks, it would be his duty to awaken me, and I anticipated that he would have to rustle around dreamland somewhat in order to fulfill his function; but he was equal to the occasion, and did not propose to lose sleep while this age provides mechanical means to arouse a lodger. He collected the lodging-fee in advance, and sent me to my room with an alarm-clock, primed and set with a hair trigger. At half-past one that clock was on duty—whizz-bang-ker-ching-whir-zip. Now, I never owned such a machine, never hired one, nor run one on shares, and knew nothing about the thing. To make matters worse, this clock was of that breed that runs until it is stopped or until it runs down, even if it takes all night.

I nervously tried all of the springs and rings I could find; but the more I twisted them the louder it whanged, upside down or flatwise—whizz, whirl. I set it down rather impatiently, and exclaimed, "Now whang, whang." It did its duty faithfully. It answered all of my expectations in respect to alarm-clocks.

As I proceeded as rapidly as possible to don my attire, it occurred to me that all of the lodgers in the house would be liable to be more or less disturbed, and I tried to smother the thing under the pillow, and then all of the bed-clothes; but, no, sir; it didn't smother worth a cent. The bed-springs were in full accord, and took up the vibrations and aided the clock. It then occurred to me that a bath

There were ominous noises in other rooms, and my native desire to be quiet and not to annoy other people was undergoing a terrible strain. But I had now dressed; and with my grip in one hand and the clock in the other I made a hasty exit to the office. Ker-whang-ker-chang, it merrily sang as I tumbled it on to the table.

"Say"—

"S-a-y," said a voice almost with mine; and the dispenser of drinks, in his dreamland attire and a disheveled top-knot, strode into the office. "S-a-y—you're a daisy—oh! you're



a daisy," and he touched a little wire spring somewhere, and the infernal machine instantly stopped its clatter.

"You didn't expl"—

"S-a-y, I didn't hey?" said he, interrupting me. "Where yer been living all yer life?" and he actually acted angry. He sort o' spit his words through his teeth, in a gorgeous satanic way.

Every effort of mine to explain matters was met with "Oh! you're a daisy—you're a daisy; lived in the woods, hey?"

Then I became indignant, and felt like departing, and did so as rapidly as possible.

I had gotten half way across the street when that same disheveled top-knot appeared at the door, and that same gorgeous voice shouted, "Oh! you're a daisy—going to Frisco, hey? Blow out the gas, hayseed; blow out the gas!"

Well, I was glad to see the headlight of the locomotive, and hear the scream of the whistle to drown that voice. I reflected soberly until I arrived in Sacramento on Sunday forenoon. It came clearly before me that I had met an unmannerly fellow, and that those who dispense drinks are of

that order. It also occurred to me that it is better to ask instructions about the simple machines of our daily life rather than to fall into egregious blunders.



in the water-pitcher might cure the disease; but the neck of the pitcher was too small, and that scheme failed.

Well, I tell you I was getting desperate.



After a day's stop with a kinsman in Sacramento I pushed on again toward the north.

After leaving the Sacramento Valley we enter a mountainous region which culminates in the cloud-piercing mass of rocks and snow known as Mount Shasta. While approaching this peak we catch occasional glimpses of it a hundred miles away; and as it towers above all other surrounding mountains these distant views of it are more in the order of the sublime than a view at close range; and the view of it at its base, with no other mountains with which to compare it, is truly disappointing, and the old adage is verified, "Distance lends enchantment to the view."

At Montague, a few miles beyond Shasta. I left the S. P. R. R. and joined a few fellow-travelers on a short branch line to Yreka. Our main endeavor on this short line of nine miles was to keep a drunken man from jumping from the train while it was in motion. At Yreka I took the four-horse stage for Fort Jones, and bade farewell to all railroads for several months. Our drunken miner was on hand to take the stage too; and the idea of

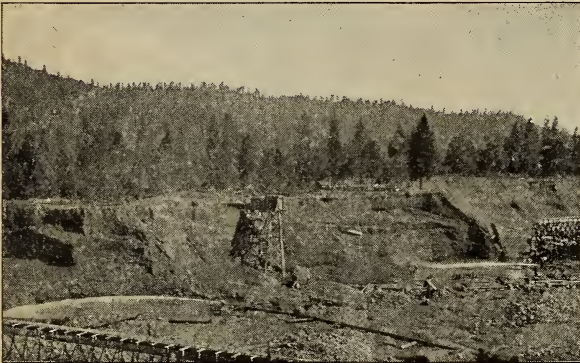
no small pursuit. Nearly every stream has its placer mines.

My destination, and where I expected to find Mr. Levering and the bees, was the town of Oro Fino. In Spanish, "oro" means gold, and "fino" fine, or, as we would say in English, fine gold.

My stage-driver from Fort Jones to the end of my journey was a unique specimen of Irishman, wearing a big pair of green goggles, driving an old rack-o-bones of a white horse attached to a wagon tied up with so many bailing-wires that it was hard to tell if it ever had a color.

I found Mr. Levering at the little postoffice, to welcome me. The gentle morning breeze was toying with his whiskers, and there was a smile of welcome and a hearty handshake. Three-quarters of a mile further along I found the end of my journey. Uncle Tommy delivered myself and trunk safely, and I turned myself to the study of the surroundings.

Oro Fino is located in a little branch of Scott Valley, and is separated from the main valley by quite a range of hills. The contrast between this portion of California and the southern portion was very marked. While it was dry, even unto death, in the south, this location was green with growing grain and alfalfa, and the streams were purling down from the mountains. It was a real pleasant sensation to listen, at various wakeful moments during the night, to the music of the water. There was a hoarser roar as from a distant waterfall. This, I learned, was from the forceful hydraulic giants washing down the earth, and separating from it the precious metal. There were two of these mines within five minutes' walk of my new home, and the season's operations resulted in a product of some \$20,000.



MINING BY HYDRAULIC PRESSURE.

riding inside the coach, and listening to his senseless gabble made me look out for a better position, and I was pleased when the driver said there was room on top; and when we were loaded for the journey there were six on top of the stage, with three inside and one drunken thing.

In making the twenty miles from Yreka to Fort Jones we cross quite a range of mountains; and in our descent upon the west side we enter a most fertile region known as Scott Valley. To the lover of grand mountain scenery it is all that can be asked for—Shasta to the east, ever covered with snow; mountain upon mountain to the west; and at that date, the 15th of April, they were wearing their white caps. Scott River and its tributaries rise in these mountains; and the melting snow replenishes the streams during the entire season. The valley is not extensive, but is very fertile, and dairying and stock-raising are the chief farm pursuits. Alfalfa is grown in abundance, and that makes it a sort of little paradise for the bee-keeper. Gold-mining is

Oro Fino was at one time a rich mining camp, and between two and three millions of dollars has been taken out. The town once contained two hotels, two stores, a livery stable, saloons, and dance-halls; but it was discovered that, under the town site, was pay dirt, and the entire town was moved to lower ground; and now where the buildings stood there is nothing but the bare bedrock. The town suffered, however, for now there is no hotel and only one store. The glory of the place has evidently departed.

The method of mining is to wash off all the dirt from the bedrock. This muddy water is run through a long flume, the bottom of which is constructed so as to leave many creases crosswise of it. Quicksilver is turned in at the upper end in small quantities, and this finds lodgment in the creases. The gold, as it comes down in the muddy water, also finds lodgment, and, having an affinity for the quicksilver, the two form an amalgam. The mine is run for several months without a clean-up; the forceful stream of water from



the giant nozzle is kept at work night and day and Sundays. Under a head of 300 feet pressure this stream of water will tumble over and over large boulders. If it should strike a man it would be instant death to him. I have put my finger on the stream at the outlet of the nozzle, and it feels as hard as a bone. Give the miner plenty of water and the proper pressure, and he can say to yonder hill, "Remove to yonder valley," and in a few weeks it is done.

I give your readers a view of one of these mines, with the streams in operation, also a view of the beautiful valley in which our bee-keeping operations will be performed for the season. In the foreground at the extreme right the reader will find a tall dead pine tree. The top of this covers a small portion of one of the gold-mines. The ground, covering many acres, is washed off to the bedrock; just below it are two white buildings. That is the location of our apiary. Further to the left, and below, the next gold-mine is located.

The reader has now quite an idea of our mountain home, and now for the next few Rambles bee-keeping will be the sole theme under consideration.

#### LARGE VS. SMALL ENTRANCES.

The Dovetailed Hive with Flat Cover; Raising the Cover to Prevent Combs from Melting Down.

BY W. W. SOMERFORD.

I see in GLEANINGS, Aug. 15, in "Seasonable Questions," by G. M. Doolittle, that the entrance question is so completely covered by Mr. G. M. D. that it can not last much if any longer. I will add, before it closes, for the benefit of extracted-honey men, and women too, who use the Root Dovetailed hive with flat covers, it is the *very best hive in the world*, to my notion, after trying the varieties in the United States and Cuba, to my financial regret. To perfectly ventilate said hive for Cuba and



VIEW IN SCOTT VALLEY, CALIFORNIA.

The town is much scattered. The little church shows up quite prominently. When this photo was taken (in early May) the alfalfa-fields all through the valley were green and thriving; and, though every thing looked so beautiful, the people were complaining about prospective dry weather. They gauged their predictions by the amount of snow on yonder mountains. To insure a continuous flow of water in the streams the snow should cover the mountains at least two-thirds of the way down.

Our little valley is about 2600 feet above sea-level, and the snow often falls to the depth of six feet, and, in some favored localities, twelve feet. The latter means plenty of water for all the industries of the valley, which, of course, include our industry of bee-keeping.

South Texas, where 100° in the shade is no uncommon thing, simply raise the cover and pull it back far enough for the grooved cleat on the end of the cover to rest on the front end of the hive, thus giving a wedge-shaped hole on each side of hive at top, varying in width from  $\frac{1}{2}$  inch to almost nothing near the back end of the hive. If ventilated thus, hives with flat covers (even though covers are made of stuff only  $\frac{1}{2}$  inch thick) will be perfectly safe to sit in any tropical sun, even when combs are full of honey in the top story. Then, you know, is the time they melt down—when full of honey.

On visiting a neighbor's apiary, a part of which enjoys the full benefit of the sun, at the beginning of August, the first remark was, "How do you keep your combs from melting

down?" His reply was, "Well, I don't know. I haven't had any melt down yet that I know of." I replied, as the sun was scorching hot, "I'll bet all of those there have broken combs in them," and, sure enough, all of the fullest combs were down in a heap on the bottom-bars of the frames—a mess fit only for a solar wax-extractor in place of nice combs well filled with honey ready for extracting. I began to raise covers and pull them back, so as to catch end cleats on top of hives at *front end*, thus giving room for a small stream of air to pass between cover and top of frames, making all safe.

The friend in question remonstrated, saying the robbers would eat them up. I replied by applying the ventilating-process to so many that, if the robbers ate them up, they would have to eat them *all* up; and, to my friend's delight and surprise, the robbers did not try to eat them *all* up, nor any of them, for that matter. The flat cover is one of the best features of the Root Dovetailed hive, because it can be made cool in hot weather so easily, and warm in cool weather; no blocks or wedges to fuss with. The Root ten-frame Dovetailed hive with flat covers is what I used at Jaruco, Cuba, the winter that I took 2000 gallons of honey from just an even 100 hives in 60 days. I expect to beat that, now Cuba is free.

I can hardly keep off that Jamaica man Morrison, for running Cuba down and that little isle up so; for I know something of both places. I had four years' experience in Cuba. Navasota, Tex.

## HOW MUCH HEATING WILL MAKE FOUL-BROODY HONEY SAFE TO FEED?

Can we Afford to Extract Foul-broody Combs? Convenient Smoker-lighters.

BY DR. C. C. MILLER.

Your footnote anent the matter of destroying foul-brood spores by boiling, Mr. Editor, page 790, deserves very careful attention in the way of reply. It would be a serious matter if a number of colonies should be diseased because foul-broody honey had been fed to them after being heated insufficiently. Critic Taylor thinks 15 minutes' boiling is sufficient to make such honey safe, and you found foul-broody honey safe after being kept 10 or 15 minutes at 180°. We must be a little careful about making negative testimony go too far. Suppose that you and friend Taylor found no evil results from feeding infected honey that had been boiled 15 minutes. Suppose further that twenty others corroborated your testimony. Then suppose that five other men found the disease given by such honey after such boiling. Would you advise me to go by the testimony of the twenty-two or the five? Of the five I feel pretty sure, for the chances would be five to twenty-two that I should lose by feeding such honey.

You think it would be interesting to know whether M. Genonceaux found spores still alive after two hours and a quarter of boiling. I don't know what experiments he made, or

whether any; but I think I can refer you to testimony from a trustworthy source as to experiments that will pretty well settle that it is not always safe to feed infected honey that has been boiled only 15 minutes.

In Dr. Wm. R. Howard's excellent little treatise on foul brood, on page 20 he gives Proposition VI., "That the vitality of the spores of *Bacillus alvei* is not always destroyed when exposed to a temperature approaching 212° (boiling-point) for 45 minutes." He put spores into tubes of liquid gelatine, and thrust the tubes into boiling water. The contents of the tubes would approach but not quite reach the boiling point. Then he made trial cultures on potato. From the tube that had been in the boiling water fifteen minutes he got growth in four out of five. In the tube that had been plunged thirty minutes he got growth in one out of five; after forty-five minutes, one out of five. After fifty minutes, none.

With that testimony it would hardly be safe to advise less than fifty minutes' boiling.

Later, experiments were made on a more extensive scale by J. J. Mackenzie, Bacteriologist of the Provincial Board of Health, Ontario, Canada, the result of these experiments being quoted by Dr. Howard, page 42, as the work of "an exceedingly careful observer." Prof. Mackenzie saturated sterilized silk threads with a beef-tea culture of *Bacillus alvei* in which there was a large number of spores. The threads were dried, then heated in wax. Heated to 212°, there was growth in the different trials up to two hours' heating. No growth was secured from spores that had been kept at 212° for two and a half hours. Kept at 198° for two hours there was growth, but none after three hours.

While not inclined to dispute in the least that you may have safely fed infected honey that had less than fifteen minutes' boiling, with my present light I don't feel safe to advise any thing less than boiling two and a half hours.

A point of interest is that experiments made by Prof. Mackenzie satisfied him that there was no danger of foul brood from foundation, and also that no spores float in the air.

The spores will live for years. No amount of freezing seems to hurt them, but exposure to common air for 24 to 36 hours will destroy their vitality.

## SALTPETER RAGS FOR SMOKER FUEL.

J. W. C. Gray says: "I have had lots of trouble in getting lasting fuel for my smoker," and asks me to tell how I prepare saltpeter rags for my smoker. With pleasure, friend Gray. I think it quite likely you mean that you have trouble in getting a lasting fire instead of lasting fuel. For lasting fuel, it is doubtful whether any thing easily obtained is better than sound hard wood cut up in small pieces. The objection is the labor of preparing it. Where trees are felled, or where wood is chopped at a woodpile, you can generally pick up chips that are all right. Such fuel will last a long time, and, after the fire is fairly started, it is not likely to go out if the smoker is all right.



If your fuel is *dry*, and your fire goes out without apparent provocation, the chances are that the holes in the bottom of your fire-box have become filled up. Clean them out. Even then it may not burn as freely as it ought, and it may be the holes are too small. Punch them larger, or get a tinner to do so.

But in case your smoker is all right and your fuel is all right, you are anxious to start a fire without the necessity of puffing your smoker a long time, watching to see whether it's going to go or go out, only to say, after you have waited what seems to be a long time, when you haven't any time to wait, "There! I do believe the old thing has gone out!" Of course, you know that, when you start out from the kitchen, if a good fire is going in the cook-stove a few live coals put into the smoker for a starter are fine. But if a gasoline-stove is running you can't have coals, and you may not want to light your smoker till you reach the apiary. In that case it is very nice to have something that will go for sure at the first touch of a match. Now I'll tell about the saltpeter.

I take a two-gallon crock (of course, larger or smaller would do), and throw into it a pound of saltpeter, then fill half full of water. Into this I put pieces of rotten wood or cotton rags. The wood must be allowed to soak for a day or so, but the rags may be taken out at once, or they may be left a month. If you use rotten wood for fuel, and wish to tell the saltpeter wood easily from the other, it's a good plan to throw a little red aniline dye into the crock. An old milk-pan with holes in the bottom, or an old colander, stands in the crock, and some of the rags are put into that to drain and dry. Next time I come for saltpeter rags I take them out of the colander, put some out of the crock into the colander, and put some new ones into the crock. If none are dry enough I dry them in the sun or stove-oven. When I want to fire my smoker I take a rag, perhaps a piece of an old shirt or dress, the size of my hand (I don't mean the dress but the rag is the size of my hand), touch a lighted match to it, roll it into a little ball, and drop it into the smoker. Then, without waiting to see whether it will burn or not, I fill up the smoker with chips, planer-shavings, or what-not, with no fear but there will be a good fire with a very little puffing.

Marengo, Ill.

[I grant that it *looks* as if honey affected with *Bacillus alvei* must be boiled at least 45 minutes; but in each of the experiments mentioned it was not possible for the heat to act directly and promptly on the microbes. It would take possibly ten minutes before the gelatine in the test-tube would reach the boiling-point, and it might take longer. Again, gelatine, as its name indicates, is a thick syrupy liquid, more so than honey, and would, in my opinion, take longer to heat than a liquid as thin as water. Honey, however, that is put into a kettle, is raised from the temperature of the room gradually to the boiling-point, sterilization commencing to take place at once. Now, if it were boiled ten or fifteen

minutes, would it not receive the same sterilization as the gelatine in the test-tube plunged into boiling water and kept there for 45 minutes? But after taking all of this into consideration, science still seems to be at variance with practice. Has there ever been a case recorded where infected honey brought to a boil, and kept there for five or six minutes, gave rise to the disease in a colony to which such honey had been fed? If there has, I do not remember it. R. L. Taylor, D. A. Jones, ourselves, and scores of others, have fed diseased honey that had been brought to a little more than a boil, and yet, so far as I know, the disease did not appear in the colonies fed with such honey. It is very possible that I am mistaken; and if I am, I wish that those bee-keepers who have tried feeding honey boiled not more than four or five minutes, and experienced bad results, would hold up their hands.

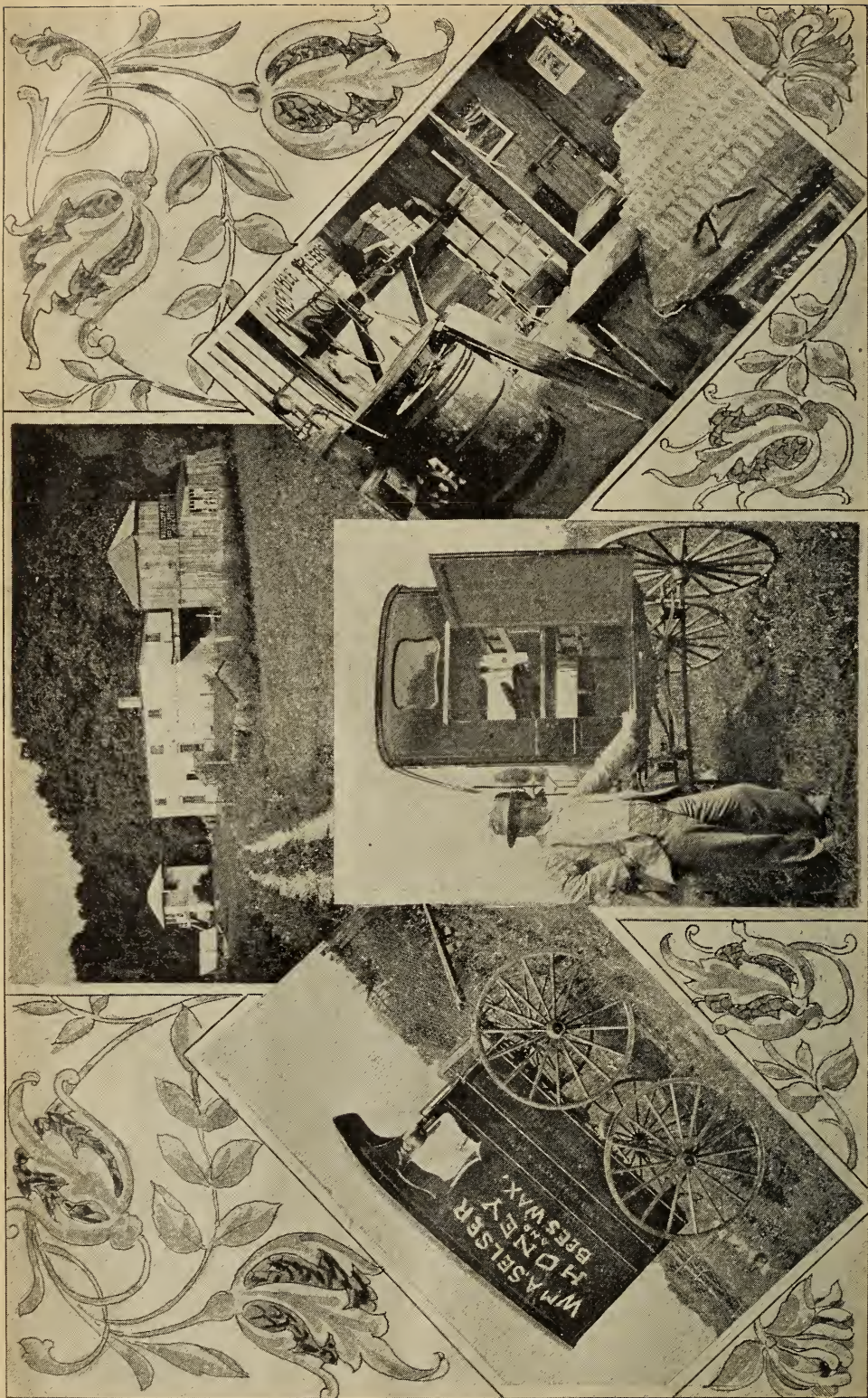
This is an important matter, and we can not afford to make any mistakes. If there is just *one* bee-keeper who has found that five minutes' boiling is not enough, then we ought to advise boiling for at least an hour to make sure.

Personally I see no need of feeding back honey that comes from an infected colony. There is great danger of exposing such honey to the bees during the process of extracting; and my advice is, and always has been, to burn the combs, brood and all, even if some of the combs are nicely filled with honey. But suppose there were no danger in extracting the honey, there is the cost of the labor; and this, taken in connection with the fact that boiled honey, especially if it be boiled *an hour*, would be of inferior quality, the amount saved per colony, after all expenses were deducted, would be insignificant. The average colony would not contain over 10 or 15 lbs. of honey. The cost of extracting this honey, *just one colony alone*, and messing up the extractor (not to mention smearing it over with deadly microbes), could not be much less than 25 cts. Then the honey that was boiled for a whole hour would be dark in color and off in taste. Such honey might bring 4 cts., but more likely not more than 3. This honey at 3 cts. would make 45 cts. Subtract from this the cost of extracting the one colony, 25 cts., and the cost of the package, how much money would be left? If the *whole apiary* were infected with foul brood, then the case might be different.

I saw Dr. Miller light one of his saltpeter rags with a match. It seemed to me it had "gone out." I remarked, as he crammed the rag down the smoker and more stuff on top of it, "You will get no fire out of that." "Oh! that's all right," and he crammed in more rotten wood and planer-shavings, and commenced to work the bellows. After about half a dozen whiffs the smoke began to pour out. "Those saltpeter rags always light and stay lit," said the doctor.

It seems to me no bee-keeper could afford not to have such smoker-lighting material on hand, and plenty of it. The labor it would save would more than make up for its slight cost. Sometimes when I want a fire in a smo-





SELSE'S HONEY-BOTTLING WORKS, HONEY-LABORATORY, AND HONEY-WAGON.—SEE EDITORIALS.



ker in a hurry, and proceed to light it in the usual way, I find the thing has "gone out" just when I need it the most.—ED.]

### VISIT AMONG THE BEE-KEEPERS.

At Hutchinson's and Taylor's.

BY H. R. BOARDMAN.

*Continued from page 835.*

At Judds Corners I wheeled up to a country store to take a few minutes' rest. Some nice honey on the counter attracted my attention at once.

"Can you tell me," I asked, "who brought this honey?"

"Oh, yes! Dr. Smith. He's a scientific bee-keeper. He lives just up at the second house."

A few minutes later I was talking with Dr. Smith as familiarly as if we had been acquainted for years. Not a moment was wasted in compliments or apologies. Dr. Smith is an intelligent, progressive bee-keeper who takes pride in doing every thing just right. He keeps about 25 colonies of bees, as he said, partly for the diversion but not wholly for the fun of the thing, as he was trying to make it pay. He had a small shop with some kind of power where he made his own supplies. Dr. S. insisted on showing me his honey, which was already filled into neat cases. "And now," he said, "I want you to show me how to grade my honey *properly*. I want to do every thing *right*."

Then he commenced prying off the covers to the cases, and taking out the honey.

"Well, Dr. Smith, I can show you how to grade your honey according to the Washington rules, but I do not grade my own that way. I see you do not use separators," I said, as I commenced grading the sections back into the empty cases. "Do you think you can make it pay to dispense with separators?"

"Yes, I think so. I think the bees will go into the sections more readily, and more surplus be secured, without separators than with. The sections will be fuller and heavier, but 7 to the foot should be used instead of 6."

"Well, doctor, I am a little surprised at this. I had supposed this method was obsolete. I think you will change your mind after a while," and while busy talking he pulled up a section with a fat side, and stripped off the delicate cappings against the next section.

"There, doctor, you have yourself furnished me with one of my best reasons for using separators. If you and I, with our skill and care in handling this honey, make such mistakes as you have just made, how about the busy retailer who pulls up the sections in a hurried, careless way to show to his customers? Of course, he will be sure to do the same thing that you have just done. The honey will leak and become untidy; the dealer will be disgusted with it, and, may be, lose his patience, and declare in forcible language, perhaps,

that he doesn't want to be bothered with any more of the leaky stuff, and a good customer is lost. Then I see you have some sections so irregular in shape that they will not go in at all."

"A very few," he replied. "I set those aside and sell them at home, and there is really not much loss on them. But you said you did not grade your own honey by the Washington rules."

"No. I have an established method of grading my honey, which I have followed for years. My principal customers are familiar with my methods, and I did not consider it the part of wisdom to make any change in my methods of grading; besides, I think I really *like my way better*. I make but two grades—1st and 2d—putting the fancy and No. 1, if of pretty good grade, into my 1st grade."

"Would you put the nicest sections on the outside?" asked the doctor, again.

"I face my cases with the very choicest sections in the grade I am making; but the rest must give entire satisfaction to my customers for whom I am grading it."

Notwithstanding the doctor did not use separators he secured a fair crop of very choice honey. I was greatly surprised to note how swiftly the time had glided away during this interview which I had intended should be but very brief; and without an apology, and almost abruptly, I broke away and wheeled on toward Flushing, where I brought up for a lunch at a restaurant, after a very warm ride.

The first thing that attracted my attention was a showcase filled with dark inferior honey.

"The farmers bring it in," was the reply to my inquiry. "We pay 8 cts. and sell it for 12."

At several of the groceries that I visited hurriedly I found about the same thing. Those near me at the lunch-table stared in amazement as I ordered and drank only hot water that hot day while everybody else was drinking iced tea, iced lemonade, and iced water to keep them cool.

After a brief call on another bee-keeper in the suburbs of Flushing I again set my face as a flint Flintward, and wheeled along the pleasant banks of the Flint River, and in due time reached that town without further incident.

I found W. Z. Hutchinson in his sanctum, "reviewing." After reducing my temperature a little with ablutions of cold water, I commenced helping him to "review." After supper he took me out into the yard and seated me in a hammock where the bright moonshine trickled down through among the leaves and branches of some overspreading trees, and we continued to review every thing in beedom that we could think of until pretty late bedtime.

The next morning Mr. H. showed me some honey of fine quality produced by Mr. Koepen, a progressive and successful bee-keeper of Flint, and also called my attention to some 7-to-foot sections of honey produced without separators, that were quite attractive. While considering a visit to Mr. Koepen, Mr. R. L. Taylor's name was mentioned, and immediately placed on the program for the day.

Mr. Hutchinson kindly consented to accompany me on the visit.

A ride of 20 miles on the cars brought us to Lapeer, the home of Mr. Taylor—a home of beauty and loveliness. We were royally entertained at the dinner hour, then taken to the apiary, the garden, vineyard, and farm. Mr. Taylor takes just pride in his fine fruit as well as in his apiary. He reports a fair crop of comb honey of good quality.

A vigorous three cornered conversation filled up all the time for an hour, when we took leave of the Taylor home and hastened to catch the returning train at the depot, not without some regrets that the time had been so short; yet many were the crumbs of wisdom that I had been able to pick up from Bro. Taylor's experiences. The events of the day furnished interesting topics for a busy conversation on our return trip, and, with much regret, I parted company with Mr. Hutchinson at Flint, and continued my journey to Owosso via Durand. My most ardent anticipations have been realized in this visit to these two prominent bee men.

#### MAKING HIVES BY HAND, FALSE ECONOMY.

An Interesting and Laughable Experience.

BY GEO. L. VINAL.

Another season has rolled from off the calendar of life and bee-keeping, and we are again to think of supplies for next season. R. L. Taylor, the critic, thinks one can not afford to keep many bees unless he builds his own hives. I for one do not or can not agree with him.

Last fall I thought I should want about 20 two-story chaff hives, and, looking over your catalog, I found they would cost me about \$35, and I should have them to put together. As A. I. advises to be always economical, I practiced it and constructed hives myself, as on paper I could do it for about \$15. I first purchased about 1000 feet of boards for \$12, at the lot where they were sawed. I gave \$2 to have them carted to my place. I had to purchase saws, planes, hammers, squares, bench, vise, and other tools, to the amount of \$18 (but that is an indirect expense). I told the man who carted the boards from the lot to take them to the mill and have them planed. As he did not, I had to have them carted to the mill and back again at an expense of \$3.50 more. I told the head man at the mill to plane them just  $\frac{3}{4}$  of an inch thick. When I got them they were  $\frac{5}{8}$ ; cost of planing both sides, \$2.00.

After I had piled them up nicely I commenced business. I got out material for one hive and put it together. It took me two days and a half to finish it; and when I got it done it was a "beaut—." I came to the conclusion that the winter was too short to finish the rest, and I would use machinery.

Going to the mill I found I could get the use of a saw and table for 40 cents an hour; so, cutting the boards into lengths according to the A B C book, I went to the mill; and as

it was the first time I had ever used a circular saw you can imagine the progress I made; but with the help of the foreman I got started, and had worked about an hour when, somehow, as I was sawing off a strip, the board caught and came back "zip!" hitting me a crack on the nose. I thought my head was gone. The men in the mill had a good laugh, and I had a good pair of black eyes. I got at work again, and eventually finished sawing out the bodies. From the pieces left, I got out some material for frames and some division-boards; in fact, I worked the boards all up. When I got through I went to settle, and the following is the bill presented. Use of saw  $21\frac{1}{2}$  hours, \$8.60; time of foreman changing saws and gauging the same seven times, \$3.50; cartage to and from the mill, \$2; ten pounds of nails, 50 cents. I got the hives put together before spring. The total cost was \$34.10, leaving a balance in my favor of 90 cents.

I think I have a fair amount of intelligence, and some mechanical skill; and as I sit under the shade of a large maple-tree and look at those hives with their open joints, lop-sided wapper-jawed covers, I view them as mementos of my economy and industry, and rejoice that I have saved 90 cents. If putty is not very high I think I shall come out about even with what I should have done had I purchased of some reliable dealer.

Charlton City, Mass.

[I suppose I ought to keep still, because to some, at least, it will appear, in spite of any thing I may say, that I have an ax to grind. Well, I do not care; I am going to tell what I honestly believe to be the actual truth. Mr. Taylor has stated his position, and Mr. Vinal his, so here is mine from the standpoint of a supply-manufacturer—not because I am interested in the dollars and cents, but because I have read over just such experiences as these so many times, and traveled much.

If I have read one such letter as this, I believe I have read hundreds. Why? After one has tried his hand at making his own hives, spoiled a lot of good lumber, perhaps sawed off a thumb, or done something worse, he concludes to buy the stuff already made, of those who make it their business, and usually he is good and kind enough to tell his supply-man his experience, and that he has had all he wants of making his own supplies.

Now, here is what I regard as a fair statement. A natural mechanic can, many times, buy his own lumber, make his own hives and other supplies, and save money; but in order to do so he must keep quite a complement of nice machinery; for I assume that no one can afford to fuss with a handsaw—that is, providing he regards his time as worth ten cents an hour. But where there is one handy at tools there are fifty bunglers. There are a few men, perhaps, like R. L. Taylor, Dr. G. L. Tinker, the late Miles Morton, Capt. Hetherington, G. M. Doolittle, and others I might name, who can make a success of making their own hives; but even Mr. Doolittle, who is a nice mechanic, and still does a good deal



of his own work, told me that, if he had to do it over again, he would not think of buying an engine, keeping buzz-saw machinery, and trying to do it himself, as he could better afford to buy what he needs, and save the interest on his investment. But there is the case of Capt. J. E. Hetherington. The shipping-cases that he has made will equal the work turned out by any supply-manufacturer in the country; and although I have not seen his hives, I assume they are equally well made. He operates thousands of colonies. He is a large consumer, and can well afford to make his own goods; but another man operating an equally large number, and not a natural mechanic, had better let the buzz-saw alone; it's loaded, and liable to do more things than "hit between the eyes."—ED.]



WHICH WAY SHOULD COMBS GO INTO THE HIVE?

*Question.*—Will you please tell the readers of GLEANINGS why most of the apiarists of the country have the frames of their hives run lengthwise of the entrance? I have observed, when taking bees from trees, that the combs run crosswise of the entrance; also, in removing a colony from a box hive, that the combs were the same way of the entrance that they were in trees, especially those which come the nearest to the entrance. It would seem that, if the bees place their combs crosswise of the entrance, it would be right for us to do the same. Would it not? It would also seem as though the hive would be a great deal warmer for wintering if the frames were crosswise, as the draft, if any, would pass under the combs and not through them.

*Answer.*—If our questioner has had any great experience in cutting "bee-trees," or in transferring colonies from box hives, it would seem strange that he found the combs in *all* such colonies running crosswise of the entrance; for in the cutting of a dozen or more bee-trees, and in transferring bees from box hives by the score, I have found by careful observation that the bees built their combs at any and all angles to the entrance, where there was nothing in the tree or hive in the way of some little projection to start them to building their combs in a certain direction. Where there is some little projection of wood downward from the top of the hive or tree, having a knife-like edge, the first comb is almost sure to be started on that; and "as runs the first comb, all the rest are likely to follow," unless, perchance, there is some other like projection running angling, or in an opposite direction from the first started on, in which case the combs are likely to run in any and all directions throughout the tree or hive. So if, in a multitude of colonies, each having nothing by the way of a guide to start

building comb on, it is found that the combs run in any and all directions (as has been my experience and that of others who have done much transferring, with whom I have conversed on this matter), "it would seem" that the bees have no rule by which they build comb, as regards which way it goes to the entrance. If this is right, then we must conclude that nature has no choice in this matter, and hence we are at liberty to do as we please, unless we have better reasons for running the combs one certain way of the hive instead of any other. And this brings us to the question, "Why do most of the apiarists of the country have the frames of their hives run lengthwise of the entrance?"

I think this question has been discussed at some length during the past; but just what the argument was I am now unable to tell, and have not the time to hunt the matter up, so I will answer by telling why I have my combs run thus.

First of all, if our bees are to thrive, the water from rains and snows should not be allowed to go inside of the hive any more than they should be allowed to run all over the floors of our houses in which we live. In our houses we have nearly tight-fitting doors, and under them a threshold, the latter being made of the right shape and with the right pitch so that all water which blows or falls against the door or side of the house is impelled outward, thus keeping the floors of the house dry all the while. But with a hive it is different, for the "door" (entrance) to the hive must be all the time open for the going to and fro of the bees, and to provide air for their health and existence; hence no door with a threshold can be well made so as to exclude all water, where the hive is set perfectly level each way, as is a house. Hence to overcome this *water* matter we set the hive on an incline, or give it a "pitch" toward the entrance, so that, should any water beat in there, it would immediately run out and away from the habitation of our pets.

Well, what has this to do with the matter of which way the combs run? Much, every way, for nature has so ordained that the bees always build their combs perpendicular, or "plumb," as we generally say; and so if we have the hive tip or slant toward the entrance, in order that the water can run out, and at the same time have the frames run crosswise of the entrance, the bees, in building their combs, will start right at the top; but in going downward, in a perpendicular direction, the bottom of the first comb next to the entrance will strike the side of the hive before it comes to the bottom of the frame, and all the others will have their bottoms over in the next frame, thus making the combs not interchangeable, even should they be considered movable. But where the frames run with the entrance, the hives can be leveled crosswise of the entrance, no matter how great the pitch the other way, and all combs will be built true in the frames, and, after being built, there will be no swinging toward the entrance, thus having the bottom of the first frame glued to the side of the hive, and many of the others glued

together. Then the most of bee-keepers prefer to have their sections run the same way that the combs in the hive below do; and if so, the bottom of the foundation in the sections is swung to one side, where the hive is inclined toward the entrance, which causes bulged and irregular combs in the sections, which hinders the proper crating of the same, and unfits them from being in the most marketable shape. And even where only starters are used in the sections, the matter is not helped any; for in the filling of the sections with combs we should have the same trouble to contend with we did in the filling of the frames.

Then, again, our questioner seems to be thinking only of wintering bees when he asks the questions, as his "great deal warmer for wintering" implies. I am free to admit that, if bees die in winter, we shall have none to be of use to us during the summer; but if we can manage to winter bees equally well with the combs running lengthwise of the entrance, thus having them ready for the summer's work, may it not make much difference with us then as to which way the frames run in the hive?

I think the questioner will be free to admit that what will make "warmer" in winter will also make warmer in summer, and hence we find that, with combs running crosswise of the entrance the bees are not able to do nearly so good work at ventilating the hive, by way of the entrance-fanners, as where the combs run the other way.

Again, where the combs are lengthwise of the entrance the bees returning from the field can run up between any range of combs they like; while where they go crosswise it tends toward the massing of many bees on the first one or two combs, so that the nurse-bees have more trouble in taking the loads of nectar as they come from the fields. There are other minor reasons which might be given, but I think the above are sufficient to answer the question as propounded.

A fly had fallen into the ink-well of a certain author who writes a very bad hand. The writer's little boy rescued the unhappy insect and placed him on a piece of paper. After watching him intently for a while the child called to his mother: "Here's a fly, mamma, that writes very much like papa." So, I mistrust, if any of the older readers of GLEANINGS should happen to read the above reply to the questioner they will find it "very much like" what they read in former years when the discussion regarding which way frames should run to the entrance was on.

#### POOR SEASON.

This season has been very poor, taking it as a whole. My crop of white honey from 68 colonies was 200 lbs., comb. My crop of dark honey is 1700 lbs. of extracted and 300 lbs. of comb. I increased my yard from 68, spring count, to 77 fall count. This is a rather poor season, but I can not get along without GLEANINGS.

CHAS. B. ALLEN.

Central Square, N. Y., Oct. 27.



#### HONEY-PAILS AT ONE-HALF CENT PER LB.

As the price for honey gets lower every year — barring poor seasons like the present one — it is an item of interest to producers of extracted honey to know what is the best and cheapest honey-package. Glass is too heavy and fragile, as a rule, for large packages. I have lately tried 9-quart tin buckets, costing 12 cts. apiece by the dozen; and as I can easily put 25 lbs. of extracted honey into a bucket it costs me only 5 mills per pound to put my honey into marketable shape. Then when it candies it can be "dug out," or liquefied by setting over a fire. But you will say a customer rarely buys 25 lbs. of honey at one time. Then pour out or remove what he wants; or, better still, if he is known to you to be perfectly reliable, leave the package, after ascertaining its weight, and allow him to pay for what is consumed. It will generally sell your entire bucketful if the honey is ripe and of good flavor. Charge 10 cts. for the bucket (it retails for 15), and your honey will then cost you a mill or less for handling. If any one can go me *one better* he is my friend if the subject is explained in GLEANINGS.

The next package I shall try will be one-pound jelly-glasses, for the retail merchants and small customer. I shall fill my glasses to within one-sixteenth of an inch, or thereabouts, with honey, then pour in melted paraffine until it is brimful, when the tin cover will be carefully slipped on and the paraffine allowed to harden, making the package air-tight, insect-proof, and easily handled. A pound package thus prepared I think will retail at 15 cts., or wholesale to dealers at 12½. I believe tumblers can be procured at 2½ cts. apiece, which allows the producer 10 cts. per lb. for his honey — the price in our market.

CHIP HENDERSON.

Murfreesboro, Tenn.

#### THE WINTERING OF TWO NUCLEI IN SINGLE-WALLED HIVES.

These are the days when the thoughts of bee-keepers turn to the subject of wintering, and any thing will interest that throws light on it. For my part I am especially interested in any thing on outdoor wintering, though most of my wintering is done in the cellar. I will relate a curious thing that happened in my apiary during the winter of 1885. In the spring of that year I bought some bees in hives that had frames about two inches shorter and as much deeper than the Langstroth. These I transferred in the latter part of May or first of June to L. hives. In cutting out the combs I left a strip about two inches wide in the top of those frames. These strips contained mostly honey, some bee-bread, a little brood, and a few eggs. Two of those hives, containing such strips of comb and a few bees,



I set back against a wire fence and left them there all summer. Queens were reared from eggs left in each, and both succeeded in getting laying queens. During the summer the middle combs were built down nearly to the bottom-board; but those on the sides were scarcely touched, the hives in the fall not being half filled with comb, and contained only small nuclei and but little honey, as the season had not been a good one. I regarded them simply as old empty hives for which I had no use, and left them where they were all winter, with no protection.

Both wintered; and during the summer of 1886 both built up to good strong colonies, filling their hives with full combs well supplied with honey. That winter I protected them by packing the same as I did my other stock, and the next year both were rousing good colonies, and cast early swarms.

This is a true story. The history of bee-keeping is full of such stories, but they do not aid us very much in solving the wintering problem. Can any of the wise ones explain why such small nuclei should have withstood the storms of winter, and retained such vigor? Perhaps some will say it was because there was plenty of room (open space) below the cluster. I am inclined to think that way myself.

HARRY LATHROP.

Browntown, Wis., Nov. 14.

#### BEEES BY THE BAGFUL.

I recently made a visit to Mr. D. L. Shangle, of Midland Co., Mich., and during my very interesting visit with him I learned one thing I thought might be interesting to some of your readers. Mr. Shangle is a great bee-hunter, having found as many as 52 swarms in one season. The night I stayed with him he came home a little after dark, having cut two bee-trees that day. Nov. 2d he came into the house with a bagful of something that made a great buzzing. On inquiry I found it was a two-bushel bag filled with bees, with a screen bottom to give them air, and also to feed them if he kept them confined any length of time. When he cuts a bee-tree he runs the bees into this bag, then they are in a convenient shape to carry; takes them home, and hives them on combs full of honey, which he has saved for the purpose. He has about as good luck wintering this class of swarms as he does those that fill their own hives. He says he can move bees much safer in hot weather by driving most of the bees into a bag, thus relieving the crowded condition of the hive, and returning them to the hive they were taken from, after the journey is made.

N. E. DOANE.

Breckenridge, Mich.

#### REPORT FROM UTAH.

While a few of our bee-keepers have had unusually large crops this season, the rule has been from two-thirds to three-quarters of a crop. I have just read Mr. Vangundy's report from Vernal, on p. 803. He is one of the lucky ones that I referred to. The highest I have heard of in the State is nearly 5½ tons of honey from 31 colonies, increased to 82.

How is this in a year when the greater portion of our bee-keepers have had poor crops?

Salt Lake City, Nov. 6. E. S. LOVESY.

#### PLAIN SECTIONS WELL FILLED.

I have been trying your plain sections this season, 4¼x4¼, and 5x4. Both were well filled. I like the looks of the tall ones. I used the Danzy crate and fence.

J. W. SPENCER.

Atworth, Melksham, England.



*F. B., Quebec.*—Any extra supers of combs you may have taken off colonies prepared for winter should be set out of doors on the regular hive-stands. Entrances should be closed to keep out the mice. Freezing temperature will destroy both the moths and their eggs. If these hives are made bee and mouse tight you will not be troubled with moth-worms during the next season; but if the hives are open to moth-millers, there is danger of moth-worms. It is our practice to store combs in winter in hives out of doors, or in buildings bee-tight and subject to freezing temperatures. The combs are not disturbed until we want them the following summer.

*C. W. W., N. Y.*—First. The matter to which you refer, of bringing a colony from an outyard or from a mile or more distant, and then dividing it after it is placed in the home yard, is a very good way of forming nuclei—the very best, in fact, but it is not always practical or convenient to do this. Second. Yes, we use full sheets of brood foundation in our frames for our newly hived swarms. Some use merely starters, and prefer them, and in some localities it may be the better practice. Third. Some prefer using a single half-depth brood-chamber in which to hive a swarm. The plan seems to work well with some bee-keepers and in some localities. The majority, however, hive in full-depth brood-nest.

*J. P. C., Mass.*—Yours at hand in reference to foul brood. There is no question that you have had the disease, from the description given. For full particulars regarding treatment we would refer you to our foul-brood pamphlet. If you follow the treatment you will be able to wipe out the disease, without any doubt. We would not advise you to brimstone any of the bees. You can save the honey—every thing except the combs and the frames; but, of course, the honey should be brought to a boiling-point and kept there several minutes to kill the spores. As to the length of time it takes for the spores to develop into *Bacillus alvei*, no one knows—probably within two or three months, possibly less. They may also lie in a dormant state for years, and develop only when favorable conditions arise.



COLD weather came on over the country generally much sooner than was expected. I wonder how many had their bees all in winter quarters.

THERE has been so much inquiry regarding fences for 1899 that I have decided to have a sort of symposium on that subject in our next issue. This will give various constructions, together with suggestions and criticisms.

#### THOSE WORDS ABOUT WORDS.

I HAVE just received a letter from a prominent and influential bee-keeper, referring to the discussions regarding the use of words. The writer gives it as his opinion that this matter has gone about as far as it is profitable, and that if it continues much longer it is liable to degenerate into dispute and personalities. I believe my friend is right. It is somewhat a question with me whether any good has been accomplished; at all events it is safe to say that there would be nothing gained by a further continuance of the discussion, for bee-journals are published primarily for the instruction they give on *bees*. So far as I am concerned the other fellows can have the last word.

#### THE APICULTURAL EXHIBIT AT THE RHODE ISLAND STATE FAIR; DIFFICULTIES IN JUDGING EXHIBITS.

I HAVE just received a letter from my friend A. E. Potter, Edgewood, Pawtuxet, R. I., inquiring why I had not written up my visit of a year ago to Providence, and more especially that part of it spent at the Rhode Island State Fair, and at the Rhode Island Bee-keepers' Educational Society. I fully intended to do so, but as the time went on I overlooked it till the letter above arrived.

In the summer of 1897 I received a very pressing invitation from Mr. Potter, who is one of the active and influential bee-keepers of Providence, to attend the Rhode Island State Fair. He also stated that it was the desire of the management that I act as judge of the apicultural exhibits. As I was expecting to make a trip east I saw no reason why I could not accept the invitation. And to be a *judge*, that would be delightful. Accordingly, at the appointed time I reported for duty. After receiving my credentials I undertook the job with pleasant anticipations; but, unfortunately for the judge, the exhibits were of nearly equal merit, and I realized as never before the difficulty of apportioning first and second premium among one's friends, although friendship should not and did not in this case influence the decisions. I remember particularly that there were two exhibits of about equal merit, and yet only one could have first. Both of the exhibitors were my particular friends. To give one man the first and the other the second would be an injustice to the

latter; and yet, what could I do? If I could have had two other judges with me, the task would have been more easy.

To make the situation more complicated, one of the men had ordered from us one of our best queens to compete for the first premium. I was aware of the fact; and even if I had thought our own queen was the best one of the lot, I would have hesitated to give her the first premium under the circumstances. But the wording of the premium-list let me out, as it specified beauty as well as other qualities. As the queen we had sent was imported, and not particularly striking in point of beauty, I gave the palm to a handsome five-bander.

After I had decided on my firsts and seconds by making a schedule of points, I proceeded to the still more delicate task of tying on the premium-cards in the presence of the competitors. Fortunately for me, they all accepted my decisions very kindly; but I know that, if I had been one of them, and had had an exhibit that I thought was just the equal of the other fellow's, and perhaps a little better, I should have believed the judge was impartial or unfair.

How often did I wish for the advice and counsel of that veteran judge, Eugene Secor!

After the awarding of premiums we had a little informal convention of bee-keepers in the evening—an association that goes under the euphonious title of the Rhode Island Bee-keepers' Educational Society. It does or did meet once a month, and its members occasionally call in some outside bee-keeper to address the meeting. On this occasion your humble servant was given the question-box—a task I found much easier than judging exhibits.

The bee-keepers of Rhode Island, especially of this association, are a progressive and jolly set of fellows. I shall not soon forget their cordiality.

*Moral:* When you are asked to act as a judge of a honey exhibit, and don't know any thing about the business, take my advice—"decline with thanks."

#### SELSEY'S HONEY; CREATING A HOME MARKET; BOTTLING HONEY.

THE latter part of August found me on a train going from Seagirt, N. J., near Asbury Park, to Philadelphia. As the train whirled into the big city—the city of Brotherly Love, so named by Wm. Penn, the city so rich in American history, the city where the old liberty bell proclaimed the independence of the United States, and a hundred years later had the Centennial—I fell to wondering whether the political strife then nearing its height would finally end in brotherly love. But politics didn't bother me that morning. I sought No. 10 Vine St., where the Root Co. has an office, and W. A. Selser is its manager. Should I find him in? Following the directions given me, in a short time I found myself in what seemed to be the busiest part of the city, near the docks, and amid the burly bustle of crowd and dray. Yes, there was No. 10, and, stepping inside, I asked for Mr. Selser. "He is in, sir." I was directed to go up that



pair of stairs, and then turn to the right and then to the left. I did so, and suddenly found myself in the presence of Mr. Selser the honey-man, busy at his desk. He had not expected me, and explained that it was a mere accident that I had found him at his office at all at that time of the year. After chatting a little we went up into his spacious wareroom where familiar objects in the shape of Root goods were shelved on every side, all ready for immediate delivery.

After talking over matters of business Mr. Selser proposed that we take in some of the sights, and then we would go to his home, where were his bees. We visited old Independence Hall, and looked at the chairs in which our famous forefathers had sat. We then went to the United States mint, where they were rolling out gold and silver dollars of Uncle Sam's money. There were some enormous bricks of gold right from the Klondike; and as we stepped from one apartment to another we saw this gold and silver worked over, and rolled out of the stamping-machines into coin. Silver dollars—there were bushels and bushels of them, but—they didn't belong to me.

Next we went to Cramps' shipyard. The St. Paul, which had, under Captain Sigsbee, so lately distinguished itself, was preparing for dry dock. After we stepped aboard we were shown the 6-pounder that had sunk the Spanish torpedo-boat.

After we had dined at Wanamaker's (a department store that is almost a world of itself) we made a visit to some of the large retail and wholesale groceries of the city, and inquired for honey. Yes, Mr. Selser has supplied all of these places with his honey. It was genuine bees' honey, and of the very choicest quality. In some places, alongside of it were some adulterated goods, or what appeared to be such, but Mr. Selser was confident he could compete against this honey by winning a name for his goods, and he certainly was doing it.

After we had looked at the bottles of honey we boarded a suburban electric car for an eight or nine mile ride to Jenkintown, where Mr. Selser lives, and where, indeed, his bees are kept. All the way along Mr. Selser pointed out signs which he had put up here and there, "Selser's Honey-bee Honey." Sometimes they would be torn down, but usually he was successful in putting them in places where they would stick. On we sped on the electric till we passed the beautiful place of John Wanamaker. A short distance further we stopped in front of a new and beautiful residence, the home of Mr. Selser. Near the front was a lawn hive bearing Mr. Selser's sign, "Bees and Honey." This sign we gave in GLEANINGS on page 46, current volume.

That same evening, as I have already explained, some thirty or forty bee-keepers assembled for an informal convention; but as I have already referred to this before, I will not speak of it further here.

The next morning Mr. Selser and I followed a path that led out through a beautiful grove, on the other side of which was Mr. Selser's

apiary, his laboratory for analyzing honey, his office, his building for bottling honey, and his barn. Elsewhere in this number, p. 878, in the center view at the top, is shown a view of the three buildings just named. The small square building at the left is the laboratory; and in the second story of this Mr. Selser has some of the very best and latest apparatus for testing and analyzing honey. The large building at the right is Mr. Selser's bottling-works. At the right of the picture will be seen an interior view of one of the rooms. The table at the right shows a lot of Muth jars ready to be filled. In the foreground is a barrel of honey, and in the rear of that a large steam caldron, or melting-vat. Several lots of honey are poured into this vat, and if there is any that is candied it will soon be brought to a liquid condition. When it is heated just enough to prevent candying for a reasonable length of time, and yet not affect its general flavor, it is poured into Muth jars, and sealed while hot.

I do not dare to tell of the large quantities of honey Mr. Selser buys and puts up in small packages after this fashion. When I tell you he takes the product of several large apiaries, you may know what a business he is doing. After he has a large supply of bottled honey he loads up his honey-wagons, as shown in the lower portion of the picture, and starts out to supply the trade. He even goes as far as New York—in fact, has quite a trade in that city, that he keeps regularly supplied.

Although there is a great deal of work connected with bottling up honey in such small packages, yet Mr. Selser makes it pay; but he has every thing on a sufficiently large scale to enable him to do the bottling cheaply.

When I asked him why other bee-keepers couldn't dispose of their honey in a similar way he shook his head. "The margins are close," he said, "and one has to be well equipped, and work on a sufficiently large scale to do it cheaply enough to secure a fair margin; and then, too, many are careless regarding the quality. Only the very best should be put in glass."

Mr. Selser objected to being kodaked in the rear of his wagon, but I told him to stand up and face the gun. I wanted our readers to get a view of him in his everyday clothes, equipped ready for business; and there he stands—see page 878—beside his wagon, ready to sell you a gross of Selser's fine bottled honey.

#### IS THE UNITED STATES BEE-KEEPERS' UNION IN THE TRUST BUSINESS?

IN an article appearing in the *Modern Farmer and Busy Bee*, published by E. T. Abbott, I find the following paragraph from an article by Wm. Stolley, Grand Island, Neb.:

It was suggested by some parties in whom I place confidence, that our Bee-keepers' Union was looked upon with suspicion as to the tendency of forming "a trust" among dealers and manufacturers of apianian supplies; and that a certain firm had been taken in during the convention at Omaha, and that this meant higher prices for goods generally which the bee-keepers have to buy. I am not at liberty to name parties who thus advised me, but I will say that, if this should be true, the prospects of getting a strong union are not good.

In an editorial footnote, which I indorse, Mr. Abbott says:

If there is any thing in the shape of a trust in connection with the United States Bee-keepers' Union, I am not aware of it. If I knew of any thing of the kind I would not remain a director of the Union very long, for I am down on trusts of all kinds. I believe every man has a right to buy as cheap as he can, to sell for what he pleases, and to conduct his business according to his own judgment, so long as he accords to others the same right; and that whoever tries to prevent him is an enemy of society.

His reference to a "certain firm" being "taken in" is as unkind as it is uncalled for, for as it stands it is a fling at four manufacturers. Two members of the Root Co. were present at this convention. Three other manufacturers — The G. B. Lewis Co., The Leahy Mfg. Co., and E. Kretchmer — were also represented. I feel very certain that none of the firms would have any thing to do with the Union if it were a trust organization of the character hinted at by Mr. Stolley. If the Union or its officers had been engaged in forming a trust among dealers in and manufacturers of apianian supplies, the fact could be easily proven.

As to the statement that prices of apianian supplies will be higher, that will no doubt be easily refuted by the '99 catalogs that will probably be out in a few days.

#### TIN VERSUS WOOD FOR HONEY.

I FIND the following editorial in the *Amer. Bee Journal* for Nov. 10:

A short time ago we were again thoroughly convinced of the great superiority of tin over wood for making honey-receptacles. We saw some barrels of honey emptied, which, before the honey was put in, weighed 28 lbs. each. After the honey was removed, those same barrels weighed 40 lbs.

We are surprised that any bee-keeper will persist in using barrels for extracted honey. He certainly would not if he had to *buy* honey in them. Besides the large amount of honey which they soak up, they are hard to handle, and, when once the honey is granulated, it is a big job to dig it out.

How different are the 60-lb. tin cans! They do not soak up any honey, and the honey they contain can be reliquified very easily in case it has granulated.

We do hope the time will soon come when wooden barrels for holding honey will be generally condemned, and that the much lighter, handier, and ever so much better tin cans will take their place.

Here is another case where locality seems to govern personal preferences. Pretty much all through New York there seems to be a preference for kegs, half-barrels, and barrels, instead of square cans. I always talked in favor of these latter because I believed them to be less objectionable. There is no tainting of the honey from the wood, as in the case of kegs, and no shrinking of staves resulting in leaking.

In talking about this same matter with S. A. Niver and W. L. Coggs, both expressed themselves as decidedly in favor of the kegs as against the square cans. Said Mr. Coggs, "Pound for pound, kegs are far cheaper."

"Yes," said Mr. Niver, "and lots handier. Why, those square cans, two in a case, are regular back-breakers to lift. I just wouldn't have them. You can roll a keg without lifting it."

"But," said I, "don't you have trouble with your barrels leaking?"

"Not at all. The great trouble," said Mr. Niver, "is that some fools think it necessary

to put water into the kegs to make them swell tight, and then after the water is emptied out they fill them with honey. It is a serious mistake, for the staves will shrink after the honey is in the package, as sure as fate. Barrels and kegs should be well made, and the staves should be thoroughly *seasoned*, and hoops driven up before putting any honey into the barrels."

When I talked with Messrs. E. France & Son, of Platteville, Wis., about this same matter they expressed themselves as decidedly in favor of barrels, and for about the same reasons, as given by Mr. Niver.

In the far West — Arizona, Colorado, and California — square cans are the only packages that *can* be used. The hot climate and dry air would render kegs and barrels utterly out of the question. Jumping again over into the State of New York, there are many commission men who prefer kegs and barrels, and occasionally a few who would just as soon have the square cans.

The truth seems to be about this: Barrels and kegs rarely give any trouble by leaking, *provided* they are well made, well seasoned, and the hoops driven up solidly *before* the honey is put into them. But there are many ignoramuses who have an idea that the barrels should be scalded out, or, if not scalded, water swished around inside until the staves swell tight. Well, when these chaps put their honey into these barrels, trouble is almost sure to follow; and this is why, in many markets, the cans are preferred. We always prefer to buy in square cans ourselves.

Neither do the square cans give entire immunity from leakage. There are other ignoramuses who, in nailing on covers to the cases, drive a nail through the can. Of course, there is no leakage for the time being; but as soon as the can is turned upside down, or stood on end, then there is a "muss." Again, some freight-handlers give the cases such severe dumping as to break the seams of the cans.

Why don't supply-dealers list kegs and barrels in their catalogs? We have done so, but there is very little call for them, on account of their great bulk, and the consequent freight rate as "empties." And then, moreover, there are usually cooper-shops scattered in various parts of the country, and, of course, bee-keepers buy them near home. Square cans, on the other hand, are made in only one or two factories in the United States, and must come through distributing agents; and for the same amount of carrying capacity they take up less room in a car.

#### HONEY SOAKING INTO THE WOOD OF BARRELS; AN IMPORTANT QUESTION.

After I had written the foregoing I read over Mr. York's editorial again, and my eye caught the statement that the barrels *before* the honey was put in weighed 28 lbs., and after removal, 40 lbs. If this proportion holds true generally, it is indeed a most serious objection to barrels and kegs. But my impression is that the cypress kegs used in the State of New York do not honey-soak; and if they do, the trouble could be remedied by pouring paraffine, while hot, around the inside of the barrels.



I should like to hear from those who are in position to know—not that I question Mr. York's statement, for no doubt the 28 and 40 lbs. is the actual truth concerning the barrels he refers to; but what I should like to know is, is there this great difference with barrels *in general*? and do oak barrels soak up more honey than barrels and kegs of cypress? and, again, would paraffining correct the trouble with either?

After writing the foregoing I found the following in the *American Bee Journal*, going to show that paraffining the barrels will probably remedy the honey-soaking objection. Here is the item, from one of the most extensive and prominent bee-keepers of Florida:

The editorial on page 712 gives only one side of this matter. I wax all my barrels with paraffine, at an expense of 10 cents each or less. This prevents soaking of honey into the barrel, of which is given an extreme case, as also all danger of flavoring the honey with any wood flavor the barrel might give.

The objection to tin cans, with us at least, who live so far from the general market, is the extra cost. The greater expense of tin, as well as the extra freight on honey in cans over honey in barrels, is very nearly or quite one cent a pound; while the increased price we may obtain for it may be one-fourth cent a pound. The question with us down here is simply one of dollars and cents, and barrels seem to have a decided advantage.

O. O. POPPLETON.

Dade Co., Fla., Nov. 14.

#### IMPROVEMENTS AT THE HOME OF THE HONEY-BEES; 400-HORSE-POWER ENGINE; ELECTRIC TRANSMISSION; NEW MACHINERY; NEW BUILDING.

The unprecedentedly heavy run of business during last spring and early summer, crowding us away beyond our capacity—the breaking-down of shafting, of belts, the crowding of every thing, in fact, to the breaking-point, have forced us to make some very extensive enlargements and improvements. We have just placed a 400-horse-power engine on its foundation, capable of standing 125 pounds of steam pressure. It is an automatic Harrisburg Standard high-speed engine.

Heretofore we have bought engines that were too small; and three or four years ago, instead of taking out our 100-horse-power engine and putting in a larger one, we placed alongside of it another engine of 75-horse-power capacity, believing that we should then have ample power for years to come. But hardly two years had rolled by before we had to speed up both engines and increase boiler pressure to get greater power; and even then both of them groaned under their loads; and during the last season the main drive-belts kept slipping; and to add to our other troubles the shaft to our large engine broke right in the height of our busy season, and this necessitated a delay of two weeks. We determined, therefore, that this year we should not only put in one large engine to displace the two small ones, but one large enough to give us a great surplus of power. We probably shall not require at present over 225 horse-power; but as our business grows we shall have a reserve of 175 horse-power, and, on a pinch, could squeeze out of the engine as much as 500 horse-power before it would slacken its speed.

The line-shafting broke because it was too small and too long; or, to put it another way, it was loaded far beyond our original intentions. To help out the shafting, we put in one 100-horse-power dynamo, in addition to the 320-light dynamo installed the last year. Connected with these machines will be something like 10 different electric motors. Two of them will be 60 horse-power each; two more, 5 horse-power each; one, 7½; one, 15; two, 2 horse-power; one 3, and one 1 horse. These are stationed in various parts of our manufacturing plant, and are anywhere from 100 to 500 feet from the generators. Instead of long lines of shafting, we have copper wires. Various motors are so placed as to apply the power at that point in the line-shafting where the greatest load falls. This, in effect, increases the capacity of the shafting, and yet leaves its size no larger than before. The large generator will be run by the 400-horse-power engine, and the small one by a separate 35-horse-power; and by a special arrangement of the switch-board we can run any motor from either generator.

But the electric motors do not by any means displace the shafting, for the larger part of our power will be applied through the old belts and shafting already installed, independently of any electric current.

On the south end of the wood-working shop we have built on an annex, three stories. This is to relieve the congested condition of the floors in the main wood-working building; and this, we calculate, will increase our capacity somewhere about 50 per cent. Last year, during the height of the season the workmen were in the way of each other, to say nothing of the manufactured stock that was piled all over every thing, making it next to impossible for the men to work to advantage.

There is another annex, located on the west side of the building, and in this is installed our large lumber-elevator—large enough to carry a heavy wagonload of lumber, if need be, from the first to the third floor. This was placed out of the main building in order to get room, and in order to avoid the danger of fire from the open hatchways, and the further danger of employees falling into the openings, or of being crushed by the dropping of the elevator platform. Such casualties we narrowly escaped last season, and are now in hopes to render them impossible.

In addition to all this, the engine-room is being enlarged to take in dynamos and other electrical equipment.

In the boiler-room there is being installed a large 350-horse-power heater to heat the water before it goes into the boilers.

In the wood-working shops will be placed new wood-working machinery, such as a power feed rip-saw, new molder, power gang section rip-saws, sanders, etc.

Taking it all in all, the cost of the improvements will amount to something like nine thousand dollars. These, together with the fact that we have about \$40,000 worth of choice lumber in the yards, will put us where we can take care of next year's trade.



#### BACK AGAIN OVER THE MOUNTAIN DIVIDE.

The weather is extremely hot in the valleys of Montana; and it really looks funny to see the thermometer between 95 and 100, when right over the tops of the buildings you see patches of snow apparently only a little way off. During the afternoon, especially about the time I wheeled over to the fish-hatchery, the temperature was pretty high, and riding uphill was rather warm work. I knew it would take me pretty much all of the next forenoon to reach the top of the divide on my way back home—that is, if I waited for breakfast-time at the hotels; therefore, during the evening I went around to the different restaurants and asked if they could give me a breakfast by daylight in the morning. None of them wanted to get up so early. But I had laid my plans to climb those mountains in the cool of the morning, and I did not propose to be baffled. I ordered a nice beefsteak and some toast. In fact, I had them fix up a nice breakfast for me the night before. Then I started off next morning (with my breakfast tied to my handle-bar) just as soon as it was light enough to keep the road. My way into the town the day before was a good deal roundabout; but the clerk at the hotel told me there was a shorter cut along the railroad, but I would have to open a few gates before I got into the mountains. There is one trouble about riding so early where you are on strange ground—you do not see anybody to make inquiries of. Well, as *usual* I got off the trail. The houses became scarcer, and the road dwindled down until there was none. Finally I ventured to wake some people up. By the way, I wonder if it is the fashion in Montana for the people to do a great part of their sleeping after daylight. I reluctantly awakened one man, and was told that I was off from the track on an old deserted trail through the mountains; that it was considerably traveled a number of years ago, but now abandoned. He said I could get through, but he rather advised me to turn and go back several miles. I did not like to go back, and so I pushed ahead. He said there was one more house some distance on, and then I should have about eight miles through the wilderness. When I arrived at that last house I was ready for my breakfast of beefsteak and toast. An old gentleman was just starting out to work in the fields; but my breakfast seemed rather dry, so I asked him to make me a cup of coffee. Now, may be you would not believe it; but my old friend made me about the nicest coffee I ever tasted; and he had some genuine "mountain cream" to go with it. He would not think of making any charge for his trouble; but as his little home seemed to be exceedingly humble I insisted on leaving a quarter beside my plate; and he seemed quite pleased that I appreciated his

particular plan of making coffee. Then began my lonely and tiresome climb. It was somewhat tiresome, but I assure you I enjoyed it for all that. This range of mountains is peculiar from the fact that little rills of running water are found at least every half-mile. I presume the water comes from the melting snows higher up, as it is most deliciously cool and soft. Of course, I did not run my wheel very much, only as it happened to be down hill or nearly level. The old bridges across these spring runs were rotted and gone, and this made it a little more laborious. After I had toiled on for what I thought to be about ten miles I said to myself, "Well, now I am coming to where it is inhabited, sure, for there is a whole flock of chickens that belong to somebody." Then I wondered that a farmer away out in those mountain wilds should keep a new breed of chickens that were handsomer than any thing else I had ever seen or heard of in any of the poultry-journals. I walked right up to the flock to admire them better. The male straightened up and challenged my approach, much as they do in a barnyard. Then I noticed that the hens had a peculiar but very beautiful topknot. After I had studied them quite a little spell, to my surprise (at a signal from the whole flock) they took wing and sailed gracefully away. Even then I said to myself, "Why, how that fellow's chickens do fly when they are a little frightened!" Then it occurred to me that I had blundered into a big flock of wild birds. I wonder if some hunter can tell me what they were. The shape of their bodies and the carriage of their heads was a little more like some breeds of game fowls. A little further on, from the crest of the mountain, I saw the railroad down below me, and a town called Timberline—I suppose so named because the timber grows only sparsely above that elevation. Then I had fun in following a sheep-path from the top of the mountain through its winding course down to Timberline; and the rest of the way I had a very good road back to Livingston.

#### MINNEAPOLIS AND VICINITY.

I had promised my good friends the Acklins that, if an opportunity presented, I would make them a call on my way home. Now, the railroad passes very near their house, a mile or more before reaching St. Paul. I was looking out of the window and saw their home, and was a little surprised to see the train slack up at just about that point; and when it promised to stop entirely I took my grip in my hand and stepped off the train. I was a little curious to know why they stopped right out in the fields. Pretty soon I found out. The conductor had alighted from the train about the time I did, or a little sooner, and I saw him chasing a crowd of boys. By the way they were cursing and swearing I presume there was some mischief afoot. By and by the conductor returned, pulling a boy along by the collar. The boy was kicking and swearing and fighting but nevertheless the conductor had him prisoner. I did not learn whether these street Arabs were stoning the passenger train, or what it was; but Mrs.



Acklin said there had been a good deal of trouble made by the boys, and I presume the conductor singled out the ringleader and took him captive. On my previous visit Dr. E. K. Jaques, of Crystal, Minn., who lives in the suburbs of Minneapolis, urged me to make him a call. We did so the next day, and he very kindly took his fine team and carriage and showed us around. First we visited the market-gardens that supply the twin cities, and it was indeed a rare treat. They get wonderful crops, and seemed to do well, even though most of their vegetables, melons, etc., are sold at exceedingly low prices. We passed two very pretty thrifty fine-looking gardens that had a little bit of history connected with them. The doctor said he was sure it would interest me in two ways. He pointed over to the beautiful fields of various vegetables, each one being a perfect picture of thrift and luxuriance, and then he spoke something as follows:

"Mr. Root, ten years ago that man was one of the most hopelessly intemperate cases we have in our neighborhood. His poor wife did every thing in the world to get along and keep starvation from the door. He had reformed again and again, only to go back deeper and deeper; and just when everybody had decided his case was utterly hopeless, the Salvation Army got hold of him. People laughed when he joined their ranks and began presenting Christ Jesus to his old comrades. He did not mind their laughs and sneers, however. He stopped all his bad habits, and went to work, and for ten years he has been a most exemplary father, husband, and citizen. Now, none of us can be positively sure that he will not, even yet, in some unguarded moment, go back; but the Salvation Army has certainly helped that man to make a good record for *ten years*; and I say God speed them in their work."

By this time we had got along in sight of another equally fine-looking vegetable-garden, and the doctor resumed:

"Mr. Root, I have not finished my story yet. The man who owns that place over there was a boon companion of Mr. —. After he was rescued he went after his special chum. This chum, however, did not take kindly to any thing pious. He jeered and ridiculed, and tried to throw off his old comrade; but the old comrade was in dead earnest. He held on to his friend, and prayed and wrestled (perhaps as Jacob wrestled on that memorable night—who knows?), and finally *righteousness* triumphed over *iniquity*. The spirit of Christ Jesus was more powerful than the iron chains of that old appetite. The two men were rescued from the spoiler, and there are records of two clean lives for ten years, or almost that, instead of one. Perhaps, Mr. Root, you might mention this in some of your writings, as an encouragement to some of the members of the Salvation Army in the work they are doing."

Now, the doctor did not say all that I have said in the above, but he stated it very strongly in his own words, and I have taken the liberty to give the facts in my own words.

God speed the Salvation Army, even if they do not always do things just as you and I would do them. At least one organization of these people has asked to have GLEANINGS in their reading-room, and I hereby propose to send it free of charge to any Salvation Army quarters where it will be read, as long as they want it.

After we had got through the melon-patches and gardens, the doctor kindly took us around among the lumber-mills of Minneapolis. Why, I was perfectly astounded. I knew there was a good deal of lumber brought down the Mississippi River, and worked up somewhere about Minneapolis; but I did not know there were acres and acres of lumber-yards—great piles as high as lofty buildings, put up so straight and true that it looked like a model city of pine boards; and, by the way, I wish the foreman of our lumber-yard could take some lessons from these piles in sticking up lumber so it will season straight and true. And then, further along, there were piles of kindling-wood—kindling enough, so it seemed to me, to start breakfast for every family in the whole Northwest for years to come. Many of these lumber-mills are turned by the power of the Mississippi River, that I have told you about before, but quite a few of them are worked by steam-plants.



Blessed are they that do hunger and thirst after righteousness, for they shall be filled.—MATT. 5:6.

I have from time to time published a good many kind words from our readers and our customers. I have given you letters from those who are greatly pleased with our work, who have praised our accuracy and commended our methods of doing business. I think it is no more than fair that I should now give you something on the other side. The letter I am going to quote is not unkind in any sense; in fact, I take it as an exceedingly kind epistle to myself personally. I believe the writer is a special friend of mine, or else he would not have written thus frankly. Our very best friends tell us plain truths. I have written a good many times about how to do business. To day I want to say something about how *not* to do business. I am now ready to submit the letter I have mentioned:

Mr. A. I. Root, dear Sir:—I have a matter which I wish you to look up, believing you have the power, as president of The A. I. Root Co., and thinking possibly some employees in said company need a shaking-up. A short time after purchasing T. K. Elvey's apiary and fixtures he handed to me your price list, 83d edition, March, 1897, which had just reached him. I saw by this list that you had the new metal rabbit already on the market. I thought the idea so good that I ordered 1000, taking pains to make every thing clear, even to cutting out the cut and marking the desired rabbit with a pencil so as not to have any mistake, as I had been warned not to order so many, by Mr. Albert Broome, as he stated said company would be sure to send the old-style rabbit as they did him when ordering an odd size. But I told him I could make it clear, as I had dealt with you when I was in the East.

From a letter I received from your company, dated Dec. 27, 1897, I take it they paid no attention to my explanation, but simply copied the order on the invoice, "1000 14-inch rabbets," and they admit they did not specify Fig. 24, as that was their regular style then; and this may all be; but the new style was in that cut, and I marked it with a pencil, and there is no sound excuse for any mistake, as the whole explanation was thorough. The above letter, written by your clerk, also stated that either kind can be used in the same place, which is not so. I can not use the rabbets with the back on. I have tried to dispose of these goods rather than to ship them back, as the freight charges would be heavy, but have not succeeded in doing so. I used some by making changes, and sold some, and have 550 still on hand. The A. I. Root Co. seems to have dropped the matter. I see now that I did not do the right thing in sending the money before receiving the goods. Kindly investigate, and advise.

Yours truly, H. F. DOLSON.

Phoenix, Arizona, Nov. 7, 1898.

P. S.—I need these goods now for making up supplies, as business with bees commences in March, when a person has no time to make bee-hives.

H. F. D.

There are several things about the above letter that give me pain. First, the writer informs me that he purchased an apiary belonging to my good friend T. K. Elvey, who dropped business and spent two weeks with me off in the mountains and deserts on that trip to Camp Verde that I have written to you about; and it hurts me to think that anything should occur to mar friend Elvey's opinion of myself and of The A. I. Root Co. As soon as the letter was received I called for the order, and here is the way it reads:

One thousand (1000) tin rabbets, 14 in. long, for frame-rests. I want the new pattern as shown in Fig. 24, March No. 1897 catalog; see cut from catalog inclosed.

Along with the above was a slip from the catalog, giving a cut of the rabbit he specially wanted the whole thousand to be like. There was no possible excuse, surely, for sending him any thing he did not order. Now, to explain how he got the old style when he so plainly ordered the new, I shall have to go back a little. Some years ago Mr. Calvert, Ernest, and others in our establishment decided that it would save us a very great amount of trouble, delay, and anxiety if a letter containing an order for goods was not submitted at all to the packer, who picks the goods up and boxes them ready to ship. There are many reasons for this. First, if the original letter goes to the packer during the confusion of the busy season the letter is liable to be lost; and if we have not the address down in a book somewhere we are in a bad fix sure. Again, a great part of our orders for bee-supplies are strung all along through long kind letters. A. I. R. or Ernest is evidently expected to read these kind letters, which is done, and we are always glad to receive them; but experience has shown that it is out of the question to get our friends to tell just what they want and nothing more. In fact, sometimes they do not know themselves. They describe what they want, and then we use our best judgment in boiling it down and making a plain order in black and white. For this reason our letters have been turned over to some competent manager who makes out the invoice, telling all the packer needs to know, and nothing more. I warned the boys there would be trouble, and there *was* trouble very soon. But there has been trouble both ways.

During the past season it would have been entirely out of the question to ask our packers to read long letters to decide what was wanted. Of course, the long letters are all right; but only one person should be expected to wade through them all. The way I used to manage, two, three, and sometimes even four clerks had to read letters all through; and even with our present management at least two people have to read every word that is written. To illustrate:

The lady who opens the mails (Mrs. Root's sister) is expected to read every word in all letters that are addressed to The A. I. Root Co. She must do this to be perfectly sure the writer does not somewhere allude to money inclosed, and also to be sure it reaches every clerk who needs to see the letter. By the way, may I stop long enough here to request urgently every one of our friends who sends us money, to tell at the very outset just how much he expects us to find inclosed? Then while the letter and envelope are both before Mrs. H.—in fact, in her fingers, she can instantly detect any discrepancy. Sometimes we find a part of the money and not the other part. For that reason, if you inclose stamps you had better tell how many and of what denomination. A great many times letters are submitted to me because I have had so much experience in the matter. They come to me, because no one else can tell positively what amount the sender said was inclosed. Let us now go back to friend Dolson's order:

The clerk who received the order was so certain that they were sending out the new style and nothing else, at the time the order came, that he simply made out an invoice to go to the packer for 1000 14-inch rabbets; but by some unexpected state or affairs that he did not know any thing about, the packer sent the whole thousand of the old style. When friend Dolson received the old-style rabbets, of course, he was a good deal put out; but it seems our clerks, instead of telling him that, under the circumstances, we would send at once, freight prepaid, a new lot, they explained how the mistake happened, and suggested that he could use the old ones without much inconvenience. Now, this latter may be true; and it is also true that a good many people have notions—peculiar notions, if you choose. I am one of that sort myself. Sometimes I do not know but my particular likes and dislikes are only notions. I think I will stop long enough to tell you of one of my notions right here.

We have in our home some very light (and I think neat) cane-bottom chairs. When I am tired out it is quite a task for me to move a heavy chair to the place where I wish to sit. Then the cane-bottom chair is most perfectly ventilated. In hot weather this is quite an item to me if to nobody else. I do not want an upholstered chair to sit in. I do not want a rocker. A chair with a whole wooden bottom I would not take as a gift. I would not have it, even if it cost \$25.00; and a chair with a cushion is an abomination. Other folks may have a cushion if they want, but no



cushion for me. I like my own chair. Now, when somebody puts one of the new-fangled chairs at my place at the table when I am tired and hungry and in a hurry, I feel like taking the thing and throwing it into the back yard. I have never done it, however; for after I get seated in my favorite chair the next thing is to ask God's blessing on our home, and that would not hitch on very conveniently as a supplement to the act of pitching the chair into the alley, nor even expressing my vexation in unchristianlike remarks. The only thing I can do is to remove the offensive chair and hunt up my own. Sometimes I groan (mentally) as I do it; but when I get into my own seat in the sort of chair that always rests me (sometimes I think even the sight of it does), then I am all right. Now, I have my notions about chairs. None of the rest of the family agree with me, but of course they permit me to have my preference, and nineteen times out of twenty the chair I love is placed right before my plate.

Friend Dolson has his notions in regard to rabbits. His reasons may be good ones or they may not be. It is none of our business whether they are or not, for that matter. He has paid his money, and he is entitled to what he pays for. Still more, as I take it, our boys advise the new style as something greatly superior to the old; and after they had recommended it, and urged people to order that kind, it would be most preposterous, not to say unkind, to intimate that our friend could not have what he wanted and paid for.

When I got hold of the matter, some of the clerks suggested that no complaint was made until several months after the goods were received, and that our stationery declares all complaints must be made inside of ten days. Now, this very thing illustrates the folly of trying to lay down cast-iron rules. The reason why friend Dolson waited so long was because, *out of the kindness of his heart*, he thought he might use or get rid of the old-style rabbits. He waited because he wanted to do us a favor, and it would be most unkind and ungrateful, as I take it, to even suggest holding him down to the ten-days rule that might justly apply in cases that generally come up.

Well, friends, I suppose you will all agree with me that the matter is bad as it is; but further inquiry developed the fact that our customer wrote a very kind letter of remonstrance *last May*. That letter was turned over to Mr. Calvert, our general manager, to answer. And now comes the most humiliating part of it. During the past season Mr. Calvert was overloaded with business—so much so that I sometimes thought he would go crazy if it had been anybody but John, with his great rugged Canadian constitution. John was obliged to admit that the letter of complaint received in May had been put away with a lot of papers, and actually remained unanswered until along in November. When I got hold of the letters the grass did not grow under my feet, I assure you, until I had sent a letter off saying I was ashamed to confess that The A. I. Root Co. had ever been guilty

of any such omission and neglect. I told him I would send him 1000 new rabbits by first train; and if he could not sell the old ones for enough to pay the freight on the new ones we would pay the freight also. Now, here is a clause in the letter of May 22d that gives me more pain than all the rest of it:

*The A. I. Root Co.*—I took every means possible to make the matter clear, because I had been warned by Albert Broomell, a bee-keeper, not to send you such a large order, as you would be sure to send the wrong thing as you did them. Now, as these were regular goods advertised in your price list, with cut, and as I made the matter plain, as my copy-book shows (letter of March 5, 1897), I fail to see any good reason why such a mistake should be made; therefore I think you should suffer the loss. I was compelled to use 400 of them at once, and afterward sold 50; the rest I have on hand. I sent in the order for the new style because I liked the idea so well, as I get more room around the end-bar, and regret greatly that I was compelled to use the 400. Furthermore, I had to pay nearly \$3.00 freight on these goods. The freight on the whole order was over \$12.00. Now, I consider it proper that you take the 550, which I still hold, and ship me 550 of the new style, as ordered, with freight paid, or return cash, and reimburse me for freight paid, and do with the goods I have here as you please. I have held the goods over a year, thinking I might dispose of them in some way. Yours respectfully, H. F. DOLSON.  
Phoenix, Arizona, May 22, 1898.

The part that gives me pain is to the effect that another customer of ours in Phoenix—one that I know and highly esteem—intimates he has been treated in the same manner; and then, to cap all, this plaintive letter which, it seems to me, ought to touch the heart of any one, received no answer whatever, but was kept waiting with a lot of other letters. Now, I am somewhat vehement, I know; but I think vehemence is a grand good thing under some circumstances. I do not wish to boast, dear brothers and sisters, but I think I tell you the truth when I say that, during all of my business life, when a fair kind letter like the above came to hand showing how some customer had suffered because of our blundering or negligence, I have made it a point to rush off some kind of answer, without waiting a minute. If no stenographer was in the office, or if it was after office hours, when I got hold of the letter I would get a postal and address it with my pencil, and then I would say, "Bro.—, you have been shamefully treated. I give you my word of honor that every thing shall be made straight and right. I will examine into the matter, and write you more fully next mail." Then before the next mail went out I took pains to hunt up all the correspondence bearing on the case, read what letters had been sent, and finally paying our long-suffering friends not only all they claimed as justly due, but something further, to heal up their wounded feelings. A great many times such parties would not take this "something further," but in that case I could feel I had done *my* duty.

Please do not understand by the above that our boys, my sons and sons-in-law, are not as much disposed to be fair and liberal in business as I am. I am sure they are, each and all, hungering and thirsting after righteousness, and I understand righteousness to mean *right doing*, no matter what else it means. Sometimes John and Ernest both have settled difficulties in a way that I thought was abso-

lutely extravagant and unreasonable. And this reminds me that one can not, in the broad sense of the term, guarantee satisfaction in *all* cases. A man once demanded \$50 damages because I sent him a few pounds of foundation that was not just what he ordered, and I was foolish enough to pay it. Quite recently a customer wanted \$10 damages because five cents' worth of seeds was not what it should have been. But such cases are very rare.

Now, one of the principal reasons for publishing these letters is because I wish to know if it is really true that The A. I. Root Co. is in the habit of sending out things not according to order, and, worse still, neglecting or delaying the matter of making such transactions satisfactory. This matter of ignoring special requests of customers is a grievance more or less widespread. At our convention in Buffalo, a little over a year ago, our good friend O. L. Hershisser illustrated this point by a little story. A man who has his own notions in regard to things went into a restaurant and asked the waiter if he could have a nice beefsteak served just according to order. He said he was willing to pay for all the extra trouble, but he "wanted *what* he wanted." The waiter was very courteous and accommodating, and promised that every thing should be exactly according to his wish, and listened attentively while he described what sort of steak he wanted, how it should be cooked, and all the particulars. All was pleasant so far. Our friend thought he had got into just the right kind of restaurant. Imagine his dismay, however, when he heard the same waiter, a few minutes later, call through the speaking-tube, "One beefsteak!" and nothing further. All the details that he had been so careful to thoroughly instill into the mind of the genial waiter were entirely ignored. I do not know but this waiter excused himself by saying that what the man described was exactly what they always served to everybody. If this was true, all right; but when the steak came it was quite ordinary, and not at all what was wanted or ordered.

Now, there are quite a few of the friends whose eyes rest on these pages who are in some kind of business. They are serving their fellow-men in some capacity or other. We are all taking orders and filling them. Let us ask ourselves the question, "Are we like the waiter in the restaurant, or are we hungering and thirsting after righteousness, and, as a legitimate consequence, serving our fellow-men because we love them?"

People have wondered and sometimes questioned as to the secret of the great growth of our business. Its early growth certainly depended on the fact that we studied the wants of our friends and fellow-travelers, and tried hard to give them exactly what they asked for. Sometimes we surprised them by giving them goods better than they expected for the money they sent; and I confess I enjoyed exceedingly to see such happy surprises. But I should not want to do business a day—in fact, I am not sure I should want to live—if I surprised these friends of ours by sending

them something they did not order and did not want. Friend Dolson tells us he was advised not to send the money with the order, for if he did we would send him something he did not want, and that after we had got the money we would not pay any attention to complaints and remonstrances. In the above case it really looks so, I confess. Now, I have not consulted with the other members of our firm in regard to what I am going to say, but I do not think they will object very much. It is this: If our company has been guilty of sending you something you did not order and did not want, and, worse still, neglecting to make the matter right when courteously informed of the fact, I wish you would address a letter to your old friend A. I. Root, and mark it "personal." I assure you it will get some sort of reply by the first mail. I simply wish to know if it can be true that only the kind words come to me and not some other things that I should be glad to know about.

Just one word more. When our business was first started I spent a good deal of time in hunting up the addresses of bee-keepers through all the agricultural papers and bee-journals, and every thing else; and when I had secured a list of these friends I began to get acquainted with them, and get orders, and I tried very hard indeed to let these people know that, in the language of our text, I was really hungering and thirsting after righteousness. When a clerk or anybody else was disposed to be impatient or short with any of these special friends, I remonstrated. I somehow learned to feel that orders were a sort of sacred trust, and that God expected me to be careful about wronging even the least of them or hurting their feelings unnecessarily. It is natural for me to be selfish, I confess; but I try hard to keep down selfishness with these friends far away, especially when they trust me with their money in advance. In my prayers of years ago and in my prayers of late, I have often said something like this: "O Lord, I thank thee for these dear kind friends thou hast given me, scattered over the land far and near. Help me to be careful about all my relations with them. Help me, in short, to honor and recommend the dear Lord and Savior by the way in which I deport myself, especially in our business transactions." As I look back it seems to me I have lived up to this prayer in only a very feeble and imperfect way; and I often feel like asking these dear friends to remember that I am still *exceedingly* human, and therefore to be slow in concluding that I am deliberately and really selfish and scheming.

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#### ELECTRIC LIGHTS FOR MECHANICAL WORK, ETC.

Since we have been using electric lights everywhere, again and again have I said to myself, and sometimes out loud, "Thank God for this wonderful, gracious new gift of the nineteenth century." In our work of installing new machinery, a great deal of it has to be done in dark basements in the month of



November. Just a very few years ago we should have been obliged to get along with it as best we could with a kerosene-lamp, lantern, greasy torch, or something of that sort. Kerosene is very unsatisfactory in many respects. Where men are working with heavy tools the lamp often gets knocked over, the chimney gets soiled by greasy fingers, and, worst of all, the light never shines right under where you are holding it. A shade helps the matter somewhat; but nothing can compare, for mechanical work, especially for work down on the ground or in the ground, with the electric globe. With the aid of electric-light cords varying from a yard in length to fifty feet, we shed a bright light anywhere men want to work. If it is a damp and chilly place, the heat from the bulb is a good thing to warm up cold muddy fingers. Just now we were pushing the mason work on the little brick room for the new 120-horse-power dynamo. Just as the masons began to think it was quitting time, even though it was only four o'clock, I pushed a wire through a cranny in one of the walls, and screwed on an electric globe. Why, daylight — especially November daylight — is not a comparison. The one little globe made every thing plain and distinct, and no wonder, for it is 16 candle-power, and yet these globes cost now only 14 or 15 cents, and each one will run 1000 hours and give a magnificent light of wonderful brilliancy. May God be praised for the man Edison! I wonder if he ever thinks of the amount of light he has been able to shed in dark places.

There is just one other thing, however, that tries me quite a little. It is because no one, unless, indeed, it is Mrs. Root, keeps these globes wiped up bright and clean. Oh how I do love to take my pocket-handkerchief and astonish the people by letting them see how much even electricity is improved by a clean globe! and it is ever so much easier to clean an electric globe than it is to clean any kind of lamp-chimney. The inside is always spotless, without any rubbing. Yes, just now while I write I am holding in my hand one of these beautiful globes to shed light for my stenographer; and while I shed the light I am warming my fingers that got chilled because I stayed out so long helping the masons.

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#### THE GROUND-CHERRY, OR HUSK TOMATO.

About a year ago, while stopping at a farmer's house in Canaan Tp., Wayne Co., just south of this one, I tasted some fruit in a pie, that was not only new but very refreshing and attractive to my taste. The good lady of the house informed me it was the ground-cherry, and gave me some of the fruit to take home, and some for seed. We have just been using some of the fruit for sauce, and, much to my surprise, every one of the family declared it was delicious. I was a little surprised at this, because our children had become a little suspicious of me in recommending so many new fruits and vegetables. When I brought the delicious canned guavas from Florida they

made up a face at my new tropical fruit. The ground-cherry captivated the whole household at once. It was not exactly love at first sight, but love at first *taste*. This plant grows wild all over our country, I believe. In its raw state it is not particularly attractive; but cooking seems to take out every thing objectionable, and leaves only a delicious fruit flavor. Try it, and see if I am not right. By the way, there is a new plant said to be much larger and finer-looking, called the Chinese-lantern plant; but we have sown seeds of it for two seasons without getting the plant, and I see some notice to the effect that they are not very good to eat. How is it, friends? Now, if there is any of the common ground-cherry in your garden or around your premises, just try them for once and see if I am not right.

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#### MORE ABOUT SWEET CLOVER.

*Mr. A. I. Root.*—I see you have tried to give sweet clover another puff. The stand you have taken in regard to that has done people in different parts of the country a great injury. I offered you fifty dollars one time if you would destroy what little I am troubled with. It is well for you that you did not accept the offer, for I have been trying to destroy it for ten years, and it is still growing. I have to fight it in my garden the same as I do any other vile weed; but where it does the most harm is in pastures that can't be plowed and cultivated on account of rock or other obstructions. For my part I can't see why you stick so tenaciously to that vile weed, for there are plenty of other plants that can be raised that will produce honey, and make a crop to turn under, and at the same time harm no one. I presume that, on that clay land where you live, it doesn't do as much harm as on other kinds of soil.

Now, brother Root, it seems to me you had better apologize for what you have done, and try something better. There are certainly many plants better, and none any worse. I have meant this for good.

Yorktown, Ill.

LEWIS A. SAWYER.

I have given the above in full because I like to give everybody a hearing, even where their notions are quite extreme. And then there is a point that I confess I have not heard of or thought of before. Our friend has some rocky ground that can not be plowed. In that case the sweet clover can not be turned under for a fertilizer. And we must accept his statement, of course, that his cows will not eat it. But I hope he will excuse me if I still hold to the opinion that they can be taught to eat it; for I can not see why cows will eat a plant greedily in one locality, and can not be taught to eat it in another. I have sometimes wondered if it is not possible there is something else so nearly like sweet clover that a mistake has been made. Let me suggest that our experiment stations have this whole matter in hand in regard to sweet clover; and they all decide that, so long as it is a clover, it surely ought not to be classed with noxious weeds. Even red clover is a *very* bad weed in a strawberry-patch; but who, on that account, would think of exterminating it from the whole farm? I am more interested in sweet clover because of its value to the general farmer than I am because of the fact that it is a honey-plant. The seed is now bought and sold by the ton, and acres are grown where the owner of the land keeps no bees at all, and has no interest in bee culture.

# The Bee-keepers' Review.

Its Editor's Experience with Bees==Written by Himself.

I don't wish to deceive you. This is an advertisement; knowing this, if you still wish to read it, well and good.

In the making of a journal, the editor is the most important factor. It is he who does the planning, who says what shall and what shall not go into the paper, who decides the thousand and one things that go to the making or marring of the paper. A fine edifice, with all its architectural beauty and adaptability to desired ends, is no more truly the creation of the architect than is a handsome, useful journal the product of its editor. Prospective subscribers to the Bee-keepers' Review would like to know something of its editor, to know in what degree he is fitted for the position he occupies. Being well acquainted with him, I am able to tell the following:

He was 25 years old when he began keeping bees; but, for six years previous, he had studied bee-keeping in every possible way—read bee-journals and books, and visited bee-keepers. When he began bee-keeping he had a good theoretical knowledge of the business—as good, perhaps, as a lawyer or a doctor has of his business when he begins to practice. For 23 years he has been a practical bee-keeper, producing both comb and extracted honey, rearing bees and queens for sale, doing the work with his own hands, becoming an “all round” bee-keeper, and, with the exception of the last few years, supporting his family from the proceeds of the apiary. For twenty years he has been reading all of the bee journals and books published in this country; has attended nearly every bee-keepers' convention of a national character; has visited scores and

scores of bee-keepers in their own homes; received and answered thousands and thousands of letters from bee-keepers; in short, he has enjoyed, and still enjoys, a personal acquaintance with most of the leading bee-keepers of the country. This experience enables him to choose wisely in selecting matter for his journal; also to write from the standpoint of actual experience upon all subjects pertaining to practical bee-keeping; to criticise, or commend, if necessary, the views of correspondents. As he runs no supply trade in connection with his journal, his mind is free from even an unconscious bias; and his views in regard to hives, implements, methods, and devices are wholly disinterested.

This sounds boastful and egotistical, did you say? I will admit it. I know it. At the same time, I know it is *true*. I have been, for years, a successful, practical bee-keeper, supporting my family from the proceeds of my apiary, and I know exactly the kind of material to put into a journal to help a man in that position—I have “been there” myself. If you have any doubts on this point, they can be very cheaply dispelled. Send me the small sum of \$1.00, and I will send you twelve back numbers of the Review, the Review for the rest of this year, and then for all of 1899. If you prefer, you may send 10 cents for three back numbers, and the ten cents may apply on any subscription sent in within a year. A coupon will be sent entitling you to the Review for 90 cents.

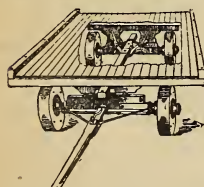
W. Z. HUTCHINSON,

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Flint, Mich.

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